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All communications to be addressed:

"The Editor, Journal of Agriculture, Victoria Square, Adelaide."

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G. F. JENKINS,

Minister of Agriculture.

POINTS FOR PRODUCERS.

Distemper.

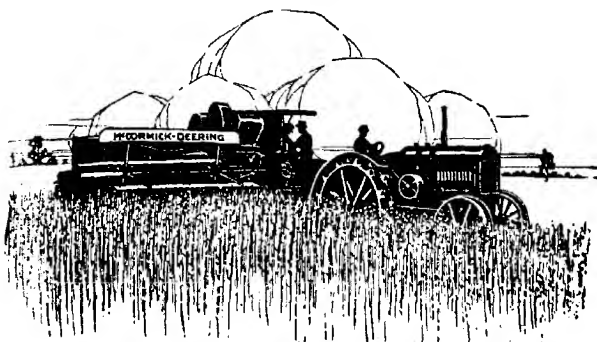
Distemper may manifest itself at any period of a dog's life, but it more commonly occurs in puppies from eight to ten weeks old. It may occur under any conditions, but particularly where other animals may have been affected on the property. The first signs noticed, according to the officers of the Stock Department, are those of dullness and loss of appetite. In the course of a few days other symptoms will develop, occurring in one of three forms, known as the respiratory, digestive, or nervous. In the first form, discharge of mucus is noticed from the nose, and cough. The second may be shown by vomiting and diarrhoea, and the third, nervous twitching. Treatment in the case of the first form consists of giving spirits of ether nit., 1½ozs.; soda hypo sulphate, ½oz.; and water, 6ozs.; one tablespoonful three times a day. For the second form, soda bi-carb., 1 dram; bismuth sub-carb., 1 dram; alum sulphate, ½ dram; glycerine, 4 drams; water, 4ozs.; half a teaspoonful every hour. For the third form, potassium bromide, bot.; bi-carb., 1 dram; mag. sulph., 3 drams; water, 1oz.; half a teaspoonful every four hours. In the early stage it is advisable to administer a teaspoonful of castor oil. Sometimes a chronic twitching of the nerves and muscles, known as chorea, persists.

Sheep Lung Worm.

Draining marshy land, fencing waterholes or pools, watering only from troughs, grazing lambs ahead of the sheep to prevent them ingesting fouled food, and avoiding, when practicable, fouled paddocks, are suggested by the Assistant Government Veterinary Surgeon as preventive measures against lung worm in sheep.

Treatment when the animals are already infected is not altogether satisfactory. Sulphur fumes, or fumes given off from iodine (generated by placing as much as will go on a 3d. bit on a hot brick) in a bag, into which the animal's head is inserted, can be tried. Care, of course, is needed to obviate suffocating the animal undergoing treatment. The sulphur fumes can be generated in a small shed, fairly airtight, into which the animals are placed, a number at a time, a few minutes being allowed for each fumigating. An attendant must always be present to see that the animals are not suffocated.

Internal treatment consists of copper sulphate solution, made as follows:—4ozs. of clean crystal dissolved in a pint of boiling water, afterwards adding 3 gallons of water. This makes enough for 100 sheep. The dose for lambs is 1½ozs., and for sheep up to 3ozs. The treatment should be repeated in a week's time.



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Subterranean Clover.

Subterranean clover is quite a good collector of nitrogen, and considerably improves land for other crops. To establish this clover to best advantage it should be sown in the autumn, so that the first useful rains—the late March or early April—germinates the seed. Failing this early germination, the growth during the first year is rarely very abundant. Wet soils, provided that they do not get covered with inches of water, will grow this clover fairly well, but best results are got away from the bottoms of the valleys in our hilly districts.

"Your district," remarked the Superintendent of Experimental Work (Mr. W. J. Spafford) to a correspondent at Laura, "should be able to make a success of growing this clover, particularly on the arable land worked on a rotation, such as:—1st year, subterranean clover; 2nd year, subterranean clover; 3rd year, cereal crop."

PUBLICATIONS RECEIVED.

"The Diseases of Farm Animals in New Zealand."—A book of 500 odd pages, of handy size, good type, and well bound, bearing the title, "The Diseases of Farm Animals in New Zealand," by Lieut. Colonel H. A. Reid, O.B.E., F.R.C.V.S., D.V.H., F.R.S.E., Pathologist and Bacteriologist to the Department of Agriculture, New Zealand, has been issued by Messrs. Whitecombe & Tombs, Ltd. The title adequately indicates the nature of the contents, the value of which is added to by illustrations, a well-arranged index, and appendices giving extracts from the Stock Acts of New Zealand.

"Pigs."—The Rolls House Publishing Company, Limited, London, have issued a publication, "Outdoor Pigs; How to make them Pay: By the leading authorities on Modern Pig Keeping." The book (150 pages) consists of a compilation of articles by different authors, under such titles as, "Selection of Stock," "General Management," "Foods and Feeding," "Marketing," "Common Ailments." It contains numerous illustrations, descriptions of breeds, list of breed societies, and a general index. Published price, 2s. 6d.

"The Irish Economist."—"The Irish Economist: A Quarterly Journal of Co-operative Thought and Progress," is issued by the Co-operative Reference Library, Plunkett House, Dublin. Published price, 2s. nett.

INQUIRY DEPARTMENT.

Any questions relating to methods of agriculture, horticulture, viticulture, dairying, &c., diseases of stock and poultry, insect and fungoid pests, the export of produce, and similar subjects, will be referred to the Government experts, and replies will be published in these pages for the benefit of producers generally. The name and address of the inquirer must accompany each question. Inquiries received from the question-boxes established by Branches of the Agricultural Bureau will be similarly dealt with. All correspondence should be addressed to "The Editor, *The Journal of Agriculture*, Adelaide."

[Replies supplied by ALAN H. ROBIN, B.V.Sc., Government Veterinary Officer.]

"J. W. M.," Mindarie, is watering stock from a tank that was filled with water before the tar with which it was painted was thoroughly dry, and asks if such water will cause any injury to the stock.

Reply—Tarry water will not affect the stock.

"E. C. O.," Penong, has mare in poor condition, rough coat, running on grass, and has not worked for four months.

Reply—I would recommend you to have the mare brought in off the grass and get her teeth looked to. They will probably want dressing up. Then starve her for 18 to 24 hours, and give a good dose of physic, either an aloes physic ball or a drachm of raw linseed oil 1 pint to 1½ pints, turpentine 4 tablespoonfuls. Keep her on soft feed while the physic is working, and after the effects of the physic have worked off, turn her out again on good grass feed for a time.

"J. F.," Two Wells, has cow with large hard lump on off side of brisket.

Reply—The condition you mention is probably a tumor of some kind, probably fibrous. So long as it does not inconvenience the cow, it may be left alone, but if it continues to show further increase in size it might require to be removed by a qualified veterinary surgeon.

Mr. W. Fahey, Box 45, Spalding, asks information regarding cow with a swelling under the jaw, which gathered and broke.

Reply—The cow had an abscess such as frequently occurs in this region from the penetration of grass seeds from the mouth. The milk will be fit for use as soon as the abscess has healed up. You should dress it daily with disinfectant lotion such as carbolic acid or lysol—one tablespoonful to a pint of water. See that the abscess drains properly, and if necessary enlarge the opening for the purpose of allowing the discharge to escape.

Hon. Secretary, Parilla Well Agricultural Bureau, Pinnaroo, asks the value of Stockholm tar as a remedy for horses with sand.

Reply—Tar was at one time considered a valuable remedy for many ailments of stock, but I have no personal experience of its use for the matter you inquire about. I would not credit it with much value.

"H. O.," Melrose, has six-year-old mare in good condition, but labors in her breathing after being driven quickly.

Reply—Your horse is probably broken winded, and there may be some heart affection also. Give her a spell, and add 1oz. of liquor arsenicalis to the feed once a day for a fortnight. Broken wind is incurable, and treatment can only be palliative. Feed and water frequently and in small quantities at a time. Do not put her to work on a full stomach. Avoid feeding on dry hay, but give instead freshly cut grass or lucerne.

"F. C.," Clare, asks (1) cure for cow pox and (2) restless on front legs following an attack of mammillis.

Reply—(1) I would recommend you to commence any treatment by first, prior to milking, cleaning the affected udder and teats thoroughly by bathing with a warm solution of boracic acid in boiled water, then dry thoroughly and gently. After milking, wipe clean and dry, and apply thinly over the parts affected a little of any antiseptic ointment (*e.g.*, boracic acid 4oz., eucalyptus 30 drops, vaseline 4ozs.). This will act as a protective and healing agent, will prevent cracking, and make the animal more tractable for milking. Prior to each successive milking, wipe udder and teats clean and dry with a damp rag, and reapply the ointment after. Boil the rag used each time, or, better still, use a fresh, clean piece each time. Cow pox runs a pretty regular course, tending to recovery, and as a rule simple hygienic precautions and cleanliness will suffice to prevent any bad complications. (2) *Re* cow, restless on front legs. I am inclined to think that your cow is suffering from a deficiency of lime and phosphate in her nutrition, and, considering her age, you may not get satisfactory results from treatment. Feed her liberally on good feed, and supplement her ration with cereal food, hay, &c. Add 1oz. salt daily to the feed, and allow her to have the following lick:—Ground bone-meal 6 parts, superphosphate 4 parts, sulphate of iron 1 part. If she does not show early signs of improvement, dry her off and fatten.

"E. B. P.," Murraytown, reports horse that "got at" a bag of oats. Very stiff and lame in front legs, and the hoofs are hot and swollen and cracked.

Reply—Your horse has had an attack of laminitis (commonly known as founder). Some red blister (red iodide of mercury 1 part, lard 8 parts) should be well rubbed into both coronets (avoid rubbing any into the heels). Apply it in the early morning, and keep the horse tied up short until evening. Do not coronet one day, the other the next day. The day after the blister is applied, wash it off with some warm water and soap, and smear on a little sweet oil or vaseline over the blister surfaces. Then turn her out for a spell of two or three weeks.

"Moissey," Private Bag, Morgan, asks treatment for lampas.

Reply—Lampas is a swollen condition of the palate immediately behind the top incisor teeth, and generally calls for no interference. The part may become inflamed and sore due to teething trouble, or indigestion, &c., and excepting where it occurs in young horses, due to teething, is merely a symptom of derangement of health, and a cooling drench or a couple of bran mashies with some Epsom salts added is usually all that is required to correct matters. If it is persistently sore and inflamed, the part may be lightly pricked with a lance, and a solution of salt and water rubbed on, or a strong solution of alum and water may be used without lancing. The old barbarous custom of burning out the lampas is now illegal.

"H. S.," Mantung, reports horse a "chronic bad doer." Animal keeps in poor condition whilst fed on good feed, and given the run of grass paddock.

Reply—The treatment must depend on the cause, and, unfortunately, you do not give any information in your letter. For example, you do not mention animal's age, the kind of work he is doing, whether you have noticed him slobbering, or is passing worms in his manure, &c. However, I would recommend, in absence of such information, that you give him the following drench:—Raw linseed oil 1 pint to 1½ pints, oil of turpentine 2ozs. Shake before giving, and starve the previous 12 hours. Then procure from a chemist ½lb. of powdered nuxvomica, and give a flat teaspoonful twice a day for 10 days, and stop for three days, and ten repeat. In addition, feed on good hay and chaff, with a little boiled grain added, and only give light work, and, if he is too free, use a cheek rain (tie back). It must be remembered that some horses, whether given the best of food and well looked after in general, can never be got to carry condition, more especially those animals of a nervous temperament. If you should write again for advice, please furnish any information which would help to diagnose the illness or injury, as the case might be.

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"N. S.," Jamestown, reports—(1) Heifer, calved five months ago, giving blood in milk. (2) Cow with enlarged quarter from which no milk can be obtained. (3) Cow with severe cut on the bottom of teat.

Reply—(1) *Re* heifer with blood in milk. This may be due to an injury to the udder, or it may be due to over rich feeding, or to some irritant plant taken with the food a paddock. If there is any bruising or injury, you must treat it. If there is no apparent injury to cause the condition, I would suggest that you give your heifer a purgative dose (Epsom salts 1lb., ginger 2 tablespoons). Reduce her feed somewhat, and try a change of pasture if possible. Keep udder and teats thoroughly clean, and milk her carefully and gently. (2) *Re* cow with lump in quarter. Apply frequent fomentations with hot water, afterwards massaging and kneading the quarter gently with the hands, using a little camphorated oil or ointment. This will tend to promote a softening and absorption of the hardness, and the kneading, along with frequent stripping, will stimulate the function of milk production. In your treatment, be at all times thoroughly clean. (3) *Re* cow with milk running away. The injury has torn out the small muscle at the bottom of the teat, which, when sound, acts as a valve, and holds the milk back from running away as it forms. Treat the wound with usual antiseptic measures. Results on healing will depend on the degree of damage done to the muscle. If it has been badly torn you will not get very good results, but if it was only slightly damaged, contraction after healing will probably take place enough to enable it to hold the milk.

"H. C. P.," Honiton, has young mare with thick discharge from nostril.

Reply—The horse undoubtedly has a chronic catarrh of the nostril, and the smell of the discharge being so objectionable, there probably is some part of the bone at the back of the nostrils diseased, in which case it would be difficult for you to cure her quickly, and it would need the services of a qualified veterinarian. Try repeated inhalations of medicated steam up the nostrils. The probability of spread of infection to other horses by the way you mention is not very great, but even if only for hygienic reasons it would be better if you could avoid her drinking out of the same trough as the others. The discharge from the nostrils would contaminate the water.

Hon. Secretary, Green Patch Agricultural Bureau, reports light horse with bruised frog of front foot. Leg is swollen from the hoof to above the knee, and the hoof appears to be coming off.

Reply—So long as there is any discharge you can only treat the wound antiseptically, by soaking it daily in a bucket containing a weak solution of bluestone for about half an hour. When the discharge stops, and all soreness disappears, apply a mild blister to the coronet. Turn the horse out for a spell in a good grass paddock. If the hoof is going to come off, no treatment can stop it, but it would be a very serious sequel, and would necessitate destroying the animal.

"A. I. S.," Wilkawatt, has mare served 12 months ago, and up to date has not foaled; udder is carrying a good quantity of milk.

Reply—The mare is undoubtedly overdue. About 11 months, or 340 days, is the normal utero-gestation period. Since she is valuable, I would recommend you to try to obtain the services of a qualified veterinary surgeon, who would make a proper examination of the mare, and give proper treatment according to what his examination reveals. Any attempt to interfere by an unskilled man would have disastrous results.

"P. J. H.," Coultia, reports ram with "sexual laziness," age $4\frac{1}{2}$ years.

Reply—Give the ram one-sixth grain of Yohimbine twice or three times a day dissolved in a little water. You should be able to obtain this from one of the wholesale druggists if you write them. Some little care needs to be exercised in using this drug, and on appearance of any untoward symptoms, such as slobbing, paralysis, depression, or convulsions, discontinue its use immediately.

PROGRESS REPORT CONCERNING RECLAMATION OF SALT PATCH AT BERRI STATE EXPERIMENTAL ORCHARD.

[By ARTHUR J. PERKINS, Director of Agriculture.]

INTRODUCTORY.

From the earliest days of planting in January, 1911, "salt" showed signs of developing on a fairly steep slope of the Berri Experimental Orchard. Originally the area affected was insignificant in extent: in the course of time, however, it expanded slowly under the influence of irrigation, and by August, 1922, it covered approximately $3\frac{1}{2}$ acres, which had become practically denuded of vegetation. This affected area has been shown on accompanying maps enclosed within dotted lines. It is an irregular, narrow tract of land, approximately 14 chains in length, and varying in width from $1\frac{1}{2}$ to 3 chains.

We decided to attempt to reclaim this land, not merely in the interests of the State Orchard, the productiveness of which was gradually diminishing, but also with a view to supplying an object lesson to settlers, whose orchards might be similarly affected. In the absence of a Departmental engineer, I have had to assume responsibility for this work.

After a careful examination of the land, it was decided that a system of under drains should be provided with a view to the removal of accumulating salt waters. It is hoped that subsequently flooding and leaching operations will help to sweeten the land and eventually restore it to its original fertility.

Preliminary work consisted in determining the surface and the clay subsoil contour lines: these are shown on separate maps herewith.

SURFACE CONTOUR LINES.

An examination of the surface contours will show that the ground falls in two directions, namely, from north to south and, to a less degree, from west to east. Both falls are fairly regular: of the two the north-south fall is the steeper, being approximately 44in. to the chain, as against 20in. to the chain for the west-east fall.

It should be pointed out here that the salt patch originated in the north-west corner of the present affected area, and extended thence in a south-easterly direction, and not along the line of greatest fall: why this should have been so, will be made clear later on.

CLAY SUBSOIL CONTOUR LINES.

The subsoil contour lines are far more irregular than those of the surface. Similarly to the surface contours, they indicate a double fall

in the ground, namely, from north to south, and from west to east. The mean north-west fall is approximately 39in. to the chain, and the west-east fall about 15in. Hence, in both directions the general fall of the clay subsoil is less pronounced than that of the corresponding surface soil, and it follows that as we descend the declivity, in a southerly or easterly direction, the clay subsoil tends to come closer to the surface, and to hold up the underground waters.

Special attention should be paid to the clay contour lines in the extreme south-western corner of the salt patch. They are placed very close to one another and indicate a rapid fall in a southerly direction, which is continued beyond the boundaries of the salt patch. In a distance of $1\frac{1}{2}$ chains we pass from contour line 97 to contour line 83, a fall of 12ft., corresponding to 96in. to the chain.

It is clear that in the past surplus drainage waters have found a natural outlet down this steep clay incline to the lower levels below, and prevented the extension of the salt patch in this direction. It is this fact which accounts for the extension of the salt patch in a south-easterly direction rather than in a southerly one.

OUTLET FOR DRAINAGE SYSTEM.

The ultimate destination of the drainage waters would naturally be the river, which immediately adjoins the orchard; and normally they would have been made to reach it by means of pipes continuing the main drain in an easterly direction. We had, however, to give consideration to the fact that immediately to the south of the main salt patch, two minor patches, about two-fifths of an acre in area each, had recently appeared: and that there was every reason to believe that in the course of time they would increase in area and encroach upon adjoining sweet land. Eventually this would have meant a special drainage scheme to deal with these new patches. Fortunately, both patches lie in the course of a possible outlet for the main drain of the main salt patch: and ultimately, notwithstanding obvious grade difficulties, it was decided to extend the main drain through the minor salt patches and make it discharge its waters into an open channel to the south of them. It is hoped that this extension of the main drain will help to sweeten the two minor salt patches.

QUESTION OF GRADE FOR PIPES.

Usually, under-drainage schemes are hampered by lack of fall in the ground: at Berri the position was reversed, and we had to face excessive falls and the danger of seeing washouts forming in the light open soil, and rapid wearing away of the soft tiles, under the influence of exaggerated velocity of the stream. I have assumed that for the purpose a fall of 3in. to 4in. to the chain might be considered ideal: and

in laying down the pipes have aimed not to exceed 9in., and, where possible, to keep within the 6-in. limit.

This policy has rendered necessary a more frequent use of inspection pits, which break the fall, than is usually adopted. And although these pits tend to raise the cost of the scheme, they present, on the other hand, inestimable advantages in an orchard where pipes are constantly exposed to being choked up by roots. Numerous inspection pits permit an early discovery of accidents of this kind, and minimise difficulties in locating definitely the affected pipes.

SIZE OF PIPES.

In the matter of size of pipes, I was handicapped by the fact that a large number of 3in. and 4in. pipes were already on hand when I took the matter up. I am inclined to look upon 3in. pipes as rather small for drainage purposes, where irrigation is practised. Eventually the extension of the main drain which passes through the minor salt patches was given 6in. pipes, and the main drain itself 4in. pipes. For the latter I believe it would have been wiser to have faced the expense and secured 5in. pipes. The first section of most of the subsidiary drains has been supplied with 4in. pipes, and the balance with 3in. pipes.

It is to be observed that with the exaggerated falls available to us, the danger of silting up is greatly minimised and pipes of relatively small diameters will probably suffice.

SUBSIDIARY DRAINS.

The main drain (pipe track No. III.), which runs close to the eastern boundary of the salt patch, receives five subsidiary drains having a south-easterly direction and more or less parallel one to the other. They follow the surface contour lines and empty into observation pits and not directly into the main drain. This arrangement presents the advantage of enabling us to detect without difficulty whenever one of the subsidiary drains is out of working order. All these drains, with the exception of pipe track No. IV., empty into observation pits in a straight line: in the latter case it has been found necessary to bend the pipes on a curve of not less than 21ft. radius.

DETAILS OF DRAINS.

EXTENSION OF MAIN DRAIN (pipe track No. I.).

This extension runs southwards from pit No. II. and empties into an open channel. It is 705ft. in length and consists throughout of 6in. pipes, the last 70ft. of which are glazed pipes cemented together: the latter come to the surface about 30ft. from the outlet. The outlet mouth is closed by a light sloping valve, which does not interfere with the flow of the water, but which checks small animals from having access

to the pipes. The mean surface fall between pit No. II, and the outlet, is about 2ft. 6in. to the chain. In order to reduce this fall the line of pipes has been broken into four sections by means of suitably disposed observation pits.

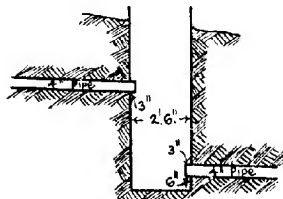
These have been arranged as follows:—

	Distance. Ft.	Fall.	
		Total. Ft.	Per Chain. Ft. Ins.
From Pit 2 to Pit 3	94	0.88	7.4
" " 3 " " 4	119	0.96	6.4
" " 4 " " 5	118	0.97	6.5
" " 5 " " 6	167	1.26	6.0
" " 6 " " outlet	207	2.23	8.5

I recognise the unwisdom of passing from a steep to a lesser grade, with resulting loss in velocity by the water, and where possible have avoided it. I believe, however, that the danger from the deposit of silt, resulting from change in velocity, tends to disappear when a pit is interposed between two changes in grade.

In order to secure safe grades for the pipes, we have been compelled to start them on the up-stream side about 5ft. from the surface and to continue them until the upper portion of the pipe came within 2ft. of the surface. This arrangement presents two objections which could not be avoided (1) on the up-stream side the pipes tend to dip unduly into the clay subsoil and (2) on the down-stream side the pipes tend to rise too much towards the surface. The first objection has been overcome by filling the trench with coarse gravelly material wherever necessary; the second one will have to be lived down.

—Typical Pit. —



Sectional Elevation.



Sectional Plan.

The observation or silt pits are of rough lime concrete and rectangular in cross-section, being 2ft. 6in. by 1ft. 6in. In depth they vary with circumstances. The down-stream outlet pipe is 6in. above the floor of the pit, whilst the up-stream inlet pipe is opposite, but immediately above the outlet pipe.

A short line of 3in. subsidiary pipe extends to the north of this main drain and empties into observation pit No. II. It is 166ft. in length with an observation pit towards its centre. This line will intercept drainage waters in the south-eastern corner of the main salt patch.

MAIN DRAIN (pipe track No. III.).

The main drain practically traverses the main salt patch lengthways from end to end, along its eastern boundary, and empties into observation pit No. II. It consists of 861ft. of 4in. pipes: and as has already been stated 5in. ones would have been preferable. The total fall in this line is 18.58ft. representing 1.4ft. per chain. This fall has been reduced by means of four observation pits into which the subsidiary drains have been made to empty.

Distances and falls between the respective observation pits are as follows, working down stream:—

	Distance. Ft.	Fall.	
		Total. Ft.	Per Chain. Ins.
Pit 10 to Pit 9	231	1.60	5.5
.. 9 .. 8	204	1.47	5.7
.. 8 .. 7	175	1.32	6.0
.. 7 .. 2	251	1.61	5.1

SUBSIDIARY DRAINS.

The main drain and its extension (pipe tracks Nos. I. and III.) are fed by five subsidiary drains running more or less parallel to one another and emptying into observation pits of the main drain at acute down-stream angles. These are pipe tracks Nos. II., IV., V., VI., and VII. For the most part these subsidiary drains are embedded in the underlying clay and follow surface contours with a mean fall of 3in. to 4in. to the chain. Occasional irregularities in surface and subsoil contours have been met with and dealt with as circumstances indicated. These subsidiary drains will, therefore, tend to intercept at right angles the downward flow of the salt-laden waters, and eventually transfer them to the main drain, whence they will be evacuated into the river.

Details concerning these drains are shown below:—

Pipe Track No.	Length. Number of Sections.	
	Ft.	
II.	718	3
do. IV.	625	3
do. V.	600	3
do. VI.	464	2
do. VII.	177	1

SOLUBLE SALTS PRESENT IN THE SOIL PRIOR TO RECLAMATION.

The soluble salts present in the soil prior to reclamation have been determined by analysis. Figures bearing on this question, indicated below, have been calculated on the assumption that an acre-foot of soil weighs 3,250,000lbs.

SOLUBLE SALTS IN SWEET SOIL ADJOINING SALT PATCH.

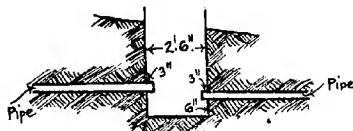
Table I. refers to a patch of sweet soil immediately above and adjoining the salt patch, on which no vegetation troubles have hitherto been noted. It may be taken to represent the condition of the present salt patch prior to the spread of salt under the influence of irrigation. Samples of soil have been taken to the level of the underlying clay.

TABLE I.—*Showing soluble salts present in sweet land on October 12, 1922.*

	1st	2nd	3rd	4th	5th	Total	Soil
	Foot.	Foot.	Foot.	Foot.	Foot.	In 5 Feet.	Percentage
Calcium Carbonate	349	423	400	318	313	1,803	0.011
Magnesium Carbonate	163	440	432	416	477	1,928	0.012
Sodium Carbonate	317	81	64	431	704	1,597	0.010
Magnesium Sulphate	41	57	—	—	—	98	0.001
Magnesium Chloride	8	—	—	—	—	8	—
Sodium Sulphate	155	106	228	366	379	1,234	0.008
Sodium Chloride	139	196	172	236	185	928	0.006
Undetermined	40	89	48	251	43	471	0.003
Totals	1,212	1,392	1,344	2,018	2,101	8,067	0.051
Soil Percentages	0.037	0.043	0.041	0.062	0.065	0.050	—

It will be noted, therefore, that in closely adjoining soil, on which no salt trouble is at present apparent or anticipated, the first 5ft. of soil contain about 8,000lbs. of soluble salts to the acre. Of these about 4,200lbs. are innocuous (calcium carbonate, magnesium carbonate and

—Typical Pit. —



Sectional Elevation.



Sectional Plan.

undetermined), leaving a balance of about 3,800lbs. of salts usually harmful to vegetation when allowed to reach a dangerous state of local concentration.

Of these the most important in quantity and most dangerous in quality is sodium carbonate (about 1,600lbs.). It will be noted that the bulk of it is placed in the fourth and fifth foot of soil, although the first foot is not without its share.

Next to sodium carbonate, sodium sulphate (white alkali of the Americans) is most in evidence (1,200lbs.). It is more evenly distributed through the soil, and in present proportions is not likely to lead to trouble.

Sodium chloride, or common salt, occupies the third rank from the point of view of quantity (900lbs.). This salt, too, is fairly evenly distributed and in its present quantities not likely to cause vegetative troubles.

We may conclude, I think, that the great distance of the underlying clay from the surface, and consequent natural good drainage conditions, have served to protect this soil from dangerous accumulation of saline matter. It is worth noting in this connection, that contrary to what happens when salt is a source of trouble, the salt concentration decreases in proportion as we approach the surface. As to the development of black alkali (sodium carbonate), particularly in the lower depths of the soil, it is probably due to interaction of common salt and the calcium salts which are abundantly present.

SOLUBLE SALTS IN LAND PREVIOUSLY BARREN BUT NOW CARRYING COARSE HERBAGE.

In Table II. are shown similar results for a soil upon which all vegetation had previously been destroyed by the action of salt, but which has since become covered with coarse grass. In this case the soil is 3ft. 3in. above underlying clay.

TABLE II.—*Showing soluble salts in soil previously barren from action of salt, but now carrying coarse grass (October 12, 1922).*

	1st Foot.	2nd Foot.	3rd Foot.	Last 3ins.	3ft. 3ins. Total.	Soil Percentage.
	Pounds Per Acre.					
Calcium Carbonate	317	667	488	106	1,578	0.015
Magnesium Carbonate	146	195	212	57	610	0.006
Sodium Carbonate	277	707	301	—	1,285	0.012
Magnesium Sulphate	—	—	171	81	252	0.002
Magnesium Chloride	—	—	8	49	57	0.001
Sodium Sulphate	89	813	122	—	1,024	0.010
Sodium Chloride	610	716	602	114	2,132	0.020
Undetermined	171	187	72	49	479	0.005
Total	1,610	3,285	2,066	456	7,417	0.073
Soil Percentages	0.050	0.101	0.064	0.056	0.070	—

In this soil, formerly barren, but now carrying in winter rough herbage, we find soluble salts in quantities somewhat similar to those shown to be present in normally sweet soil—7,417lbs. as against 8,067lbs.—but distributed over 3ft. 3in. of soil instead of over 5ft. Hence, the mean percentage which was 0.05 in the normal soil is 0.07 in the soil at present under consideration.

The most striking feature in these results is, firstly, the relative sweetness of the first foot of soil, which undoubtedly accounts for the presence of coarse surface vegetation already referred to and, secondly, the high concentration of salts in the second foot. In the first foot we have a concentration of total salts equivalent to 0.05 per cent., and in the second foot of 0.101 per cent., i.e., more than double. But this concentration of soluble salts is even greater than the figures given in Table II. would appear to indicate. Actually, the greatest concentration has taken place between 18in. and 24in. from the surface, where it is represented by 1,814lbs. of salts in 6in. of soil, corresponding to a concentration of 0.112 per cent.

In the total soluble salts—7,417lbs. per acre—are included 2,667lbs. of innocuous salts, leaving a total of 4,750lbs. of injurious salts in 3½ft. of soil, as against 3,865lbs. in 5ft. of normal sweet soil. Of these injurious salts, sodium chloride, or common salt, is represented by 2,132lbs., with a mean concentration of 0.02 per cent., which attains a maximum of 0.032 per cent. between 18in. to 21in. from the surface.

Next in importance comes sodium carbonate (black alkali) represented by 1,285lbs., and a mean concentration of 0.012 per cent. This salt reaches its maximum concentration 12in. to 15in. from the surface, where it is represented by 0.027 per cent.

Third in importance is sodium sulphate (white alkali) with a mean concentration of 0.01 per cent. Its maximum concentration is at 18in. to 21in. from the surface, namely, 0.037 per cent.

We are now in a position to realise why this soil, formerly completely barren, can now carry a winter covering of rough herbage. We must assume that earlier sterility arose from the alternating influences of summer irrigation and summer surface evaporation, which tended to concentrate injurious salts within the reach of plant roots. This land has not been cultivated nor irrigated for 9 or 10 years: and under the influence of normal winter rainfall the bulk of the salts appear to have been washed out of the surface layers into the second foot of soil. Hence, surface-rooted winter herbage has been able first to germinate its seed, and subsequently to take root in the comparatively sweet surface layers. Should, however, irrigation be applied without providing for the removal of underlying salts by artificial drainage, it is certain that barrenness would once again resume its sway.

SOLUBLE SALTS PRESENT IN SOIL AFFECTED BY SALT (I_3 and M_3).

In the next table we have an analysis of soluble salts in a completely sterile portion of the salt patch. In this case the underlying clay is only 18in. from the surface, and the figures have been given for every 3in. in order to illustrate the condition of concentration of the salts.

TABLE III.—*Showing soluble salts present in barren portion of salt Patch (I_3).*

	1st 3ins.	2nd 3ins.	3rd 3ins.	4th 3ins.	5th 3ins.	6th 3ins.	1ft. Total.	6ins. Soil Per- centage.
	Pounds Per Acre.							
Calcium Carbonate	260	179	293	228	163	171	1,294	0.027
Magnesium Carbonate	—	146	219	73	154	146	738	0.015
Sodium Carbonate	—	89	57	—	—	—	146	0.003
Calcium Sulphate	5,728	—	—	—	—	—	5,728	0.117
Magnesium Sulphate	3,494	—	—	260	73	163	3,990	0.082
Sodium Sulphate	1,406	1,032	1,263	1,503	1,601	1,877	8,687	0.178
Sodium Chloride	11,375	2,933	3,616	4,119	4,022	4,144	30,209	0.620
Undetermined	106	276	114	130	98	98	822	0.017
Total	22,369	4,665	5,567	6,313	6,111	6,599	51,614	1.059
Soil Percentages	2.753	0.573	0.685	0.777	0.752	0.812	1.059	—

A very cursory examination of Table III. will serve to show how great is the difference between the proportion of soluble salts present in completely sterile soil and soil capable of supporting rough surface vegetation. In the present instance we find the enormous quantity of 51,614lbs. of soluble salts, or over 23 tons, distributed over an acre only 18in. in depth, and representing a mean concentration of 1.059 per cent. True, in this total all of the salts cannot be described as actively injurious, notably 5,728lbs. of calcium sulphate, the constituent of gypsum. Nevertheless, they must help to increase the concentration of the soil moisture, and to that extent may prove indirectly hurtful to struggling vegetation. But even if we eliminate calcium carbonate, magnesium carbonate and calcium sulphate, there would still remain 43,854lbs., or close on 20 tons, distributed over 18in. of soil, with which reclamation operations will have to deal.

Of the injurious salts present, sodium chloride, or common salt, represented by 30,209lbs., is the most important. Fortunately its great natural solubility renders leaching operations comparatively simple. It should be noted that in October, 1922, over a third of the common salt was concentrated in the first 3in. of soil: the balance was evenly distributed over the remaining 15in.

Next in importance is sodium sulphate (white alkali), represented by 8,687lbs. evenly distributed throughout the 18in. This, also, is a very soluble salt and should offer no difficulty to leaching operations.

Magnesium sulphate, also a soluble salt, is concentrated mainly in the first 3in.

Fortunately, sodium carbonate is represented very sparingly in this soil, its mean concentration not exceeding 0.003 per cent. This may probably be attributed to the presence of large quantities of calcium sulphate in the soil, which, however, in so far as we are aware, has not been added to the soil artificially.

It should be noted finally how intense is the action of surface evaporation under upper river conditions in drawing to the surface of bare, untilled land the bulk of the soluble salts present in the soil. Already towards the end of October, i.e., before the intense summer heat has set in, we find 22,369 lbs., or close on 44 per cent. of the total amount of salt present, concentrated in the first 3 in. of soil: we must leave it to the imagination as to what would be the condition of this soil towards the end of summer. Below this first 3 in. the distribution appears to have been fairly even.

Finally, we have for consideration samples of soil (M_4) taken from another barren spot in the salt patch. In this case the underlying clay is only 1 ft. 3 in. from the surface.

TABLE IV.—*Showing distribution of soluble salts in barren spot M of salt patch.*

	1st	2nd	3rd	4th	5th	1ft. 3in.	
	3ins.	3ins.	3ins.	3ins.	3ins.	Total	Soil Percent
	Pounds Per Acre.						age.
Calcium Carbonate	98	81	114	49	19	391	0.010
Magnesium Carbonate	49	23	73	89	89	333	0.008
Sodium Carbonate	317	528	456	601	618	2,520	0.062
Sodium Sulphate	228	195	146	171	154	894	0.022
Sodium Chloride	1,211	1,089	804	869	715	4,688	0.115
Undetermined	260	154	154	65	33	666	0.016
Total	2,163	2,080	1,747	1,844	1,658	9,492	0.233
Soil Percentages	0.266	0.256	0.215	0.227	0.204	0.234	-

This particular portion of the salt patch (M_4) differs from the former (I_3) in the following points:—

(1) Absence of calcium sulphate and corresponding presence of sodium carbonate (black alkali).

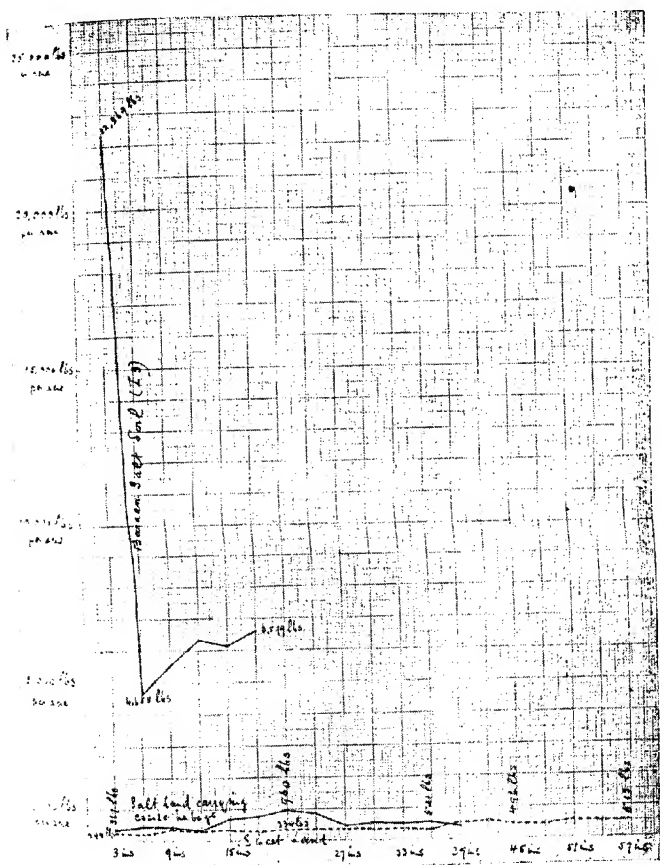
(2) Appreciable but less marked concentration of soluble salts in the surface layers.

(3) Smaller relative quantities of soluble salts, represented by a mean concentration of 0.234 per cent. as against 1.059 per cent.

It should be noted that again common salt (sodium chloride) is the chief injurious salt present, followed in this case by sodium carbonate at the rate for the latter salt of over one ton to the acre.

COMPARISON OF SALT DISTRIBUTION IN THE THREE TYPES OF SOIL.

Finally, I have endeavored to give graphic illustration to the distribution of salts in these three types of soil, namely, (1) barren salt land; (2) land previously barren, but now carrying coarse herbage; and (3) adjoining sweet land.

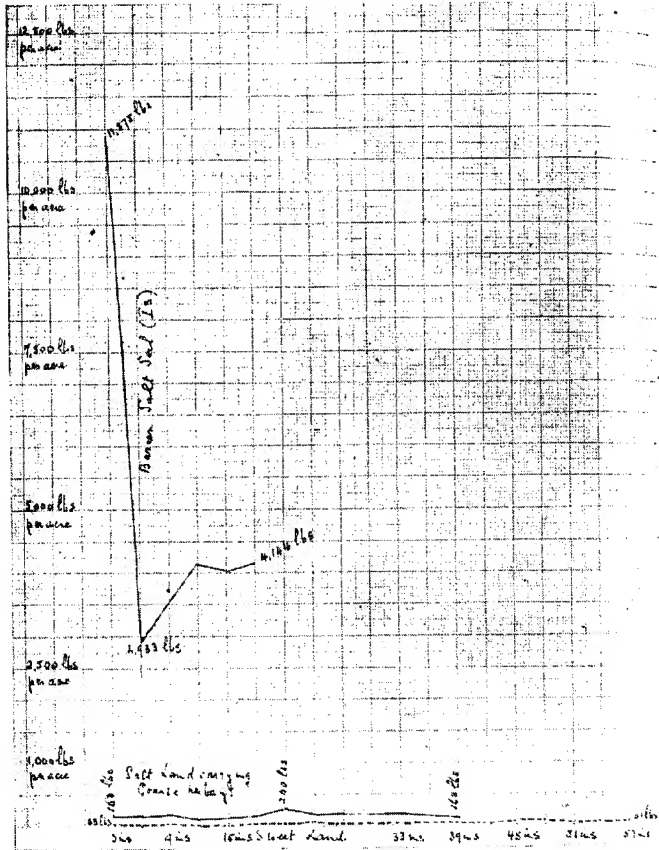


GRAPH 1.

Showing distribution of total soluble salts in lbs. per acre at intervals of three inches in depth for - (a) barren salt land, (b) land previously barren but now carrying coarse herbage, and (c) adjoining sweet land.

The total soluble salts present in each successive 3 in. of soil has been indicated in lbs. per acre for each type of soil (graph 1), and similar data have been given for common salt (graph 2).

It will be noted how much shallower is the barren salt land (18in. above clay) than the adjoining sweet land (57in. above clay). Again, the concentration of both total soluble salts (22,369lbs. to the acre) and common salt (11,375lbs. to the acre) in the first 3in. of soil is



GRAPH 2.

Showing distribution of sodium chloride (common salt) in lbs. per acre at intervals of three inches in depth for—(a) barren salt land, (b) land previously barren but now carrying coarse herbage, and (c) adjoining sweet land.

strikingly illustrated for the barren salt land; similarly, the lower proportions in succeeding 3in. of soil are equally apparent. On the other hand, the almost horizontal lines for the sweet soil indicate great regularity of distribution of both total soluble salts and common salt.

Such, then, is the condition of the soil which we hope to sweeten gradually by successive leaching operations. Surplus irrigation waters will take into solution the soluble salts and convey them into the drain pipes, whence they will be evacuated into the river. In addition, the pull of the under drains will tend to counteract to some extent the influence of surface evaporation and will help to retain the salts in the lower layers of the soil, where they must prove less injurious to vegetation.

RESULTS FROM PARTIAL LEACHING IN 1922-23 SEASON.

The drains were not definitely laid until the end of the 1922-23 season; and it follows that leaching has been carried out under difficulties, and only to a limited degree. The results secured, however, have been fairly striking, and I propose giving a full account of them. It should be stated that a careful record of all water passing through the drains is being kept, and from time to time these waters are being analysed.

FIRST IRRIGATION.

The first irrigation affecting this area, after the pipes had been partially laid, took place between the 13th and 16th of November: at the time pipe track No. I. and portion of No. II. only had been laid. The drains ran continuously from November 13th to December 12th, and evacuated during that time 24,235 gallons of water. During this period, the following quantities of saline matter were removed through the drains:—

TABLE V.—*Showing saline matter removed by drains between 13th November, and 12th December.*

Calcium Carbonate (lime)	28 lbs.
Magnesium Carbonate	60 „
Sodium Carbonate (black alkali)	138 „
Sodium Sulphate	164 „
Sodium Chloride (common salt)	351 „
Undetermined	23 „

Total, 764 lbs.

SECOND IRRIGATION.

The second irrigation took place between the 22nd and 25th of December. By this time pipe tracks Nos. I., II., III., and IV. were in working order. The drains continued running from 22nd December to 30th January, during which period they evacuated 68,996 gallons. The amount of saline matter removed from the soil thereby was as follows:—

TABLE VI.—*Showing saline matter removed by drains between 22nd December and 30th January.*

Calcium Carbonate (lime)	110 lbs.
Magnesium Carbonate	356 „
Sodium Carbonate (black alkali)	194 „
Sodium Sulphate	1,188 „
Sodium Chloride (common salt)	2,335 „
Undetermined	109 „
<hr/>	
Total,	4,292 lbs.

THIRD IRRIGATION.

The third irrigation started on February 2nd and was completed on the 5th. The drainage system was practically completed by this time, and ran continuously from February 2nd to March 5th, during which period 41,431 gallons of water passed through the drainage system, carrying with it the following quantities of saline matter:—

TABLE VII.—*Showing saline matter removed by drains between February 2nd and March 5th.*

Calcium Carbonate (lime)	48 lbs.
Magnesium Carbonate	197 „
Sodium Carbonate (black alkali)	246 „
Sodium Sulphate	840 „
Sodium Chloride (common salt)	1,375 „
Undetermined	41 „
<hr/>	
Total,	2,747 lbs.

SPECIAL IRRIGATION.

A special cover-crop irrigation was given on 16th and 17th of March; thereafter, the drains ran between the 16th and 30th of March, during

which time they evacuated 7,755 gallons of water, containing the following quantities of saline matter:—

TABLE VIII.—*Showing saline matter removed by drains between March 16th and March 30th.*

Calcium Carbonate (lime)	11 lbs.
Magnesium Carbonate	53 ..
Sodium Carbonate (black alkali)	35 ..
Sodium Sulphate	202 ..
Sodium Chloride (common salt)	332 ..
Undetermined	9 ..
<hr/>	
Total,	642 lbs.

FIFTH IRRIGATION.

Autumn irrigation was practised on April 28th and 29th, after which drains ran continuously between April 28th and May 14th, during which time 25,853 gallons of water passed through them containing the following quantities of saline matter:—

TABLE IX.—*Showing quantities of saline matter removed by drains between April 28th and May 14th.*

Calcium Carbonate (lime)	24 lbs.
Magnesium Carbonate	64 ..
Sodium Carbonate (black alkali)	67 ..
Sodium Sulphate	132 ..
Sodium Chloride (common salt)	260 ..
Undetermined	28 ..
<hr/>	
Total,	575 lbs.

WINTER RAINFALL LEACHING.

Winter rainfall is never very heavy in the Berri district; nevertheless it is sufficient to lead to the removal by drainage of quite appreciable quantities of saline matter.

Last winter, between May 27th and July 30th, we registered 3.92 in. of rain distributed over 29 rainy days. It follows that most of the falls were insignificant. In fact in no single instance was half an inch registered for 24 hours: and on only three occasions was there more than one-third of an inch for the same period; whilst on 12 days falls were below 10 points.

During this period of 67 days, over which no irrigation was practised, the drains ran continuously except for four days early in June. The total amount of water passing through them was represented by

45,787 gallons, which, if we suppose the drainage system to affect $9\frac{1}{2}$ acres would represent five to six per cent. of the rainfall actually reaching the land.

I am not in a position to state definitely the quantity of saline matter removed in this water, as all analytical data are not yet available. Nevertheless, on a close approximation, I estimate the results to have been somewhat as follows:—

TABLE X.—*Showing estimated saline matter removed by drains between May 27th and July 30th, as result of winter rains.*

Calcium Carbonate (lime)	84 lbs.
Magnesium Carbonate	394 „
Sodium Carbonate (black alkali)	338 „
Sodium Sulphate	1,549 „
Sodium Chloride	2,703 „
Undetermined	84 „

Total, 5,152 lbs.

It will be agreed in the circumstances that the effects of winter rain leaching have been fairly appreciable.

TOTAL SOLUBLE SALTS REMOVED FROM THE SOIL BETWEEN MID-NOVEMBER, 1922, AND END-JULY, 1923.

The total quantity of soluble salts removed from the soil by drainage as the result of both summer irrigation and winter rains, may be summarised as follows:—

TABLE XI.—*Showing draining results at Berri between mid-November, 1922, and end-July, 1923.*

	Summer Irrigation.	Winter Rains.	Total.
Water Through Drains	168,270 gls.	45,787 gls.	214,057 gls.
Calcium Carbonate	221 lbs.	84 lbs.	305 lbs.
Magnesium Carbonate	730 „	394 „	1,124 „
Sodium Carbonate	680 „	338 „	1,018 „
Sodium Sulphate	2,526 „	1,549 „	4,075 „
Sodium Chloride	4,653 „	2,703 „	7,356 „
Undetermined	210 „	84 „	294 „
Total,	9,020 lbs.	5,152 lbs.	14,172 lbs.

Thus, then, in a preliminary campaign, which presented the disadvantage that effective drainage throughout the system did not start until late in the season, we removed from the soil about $6\frac{1}{2}$ tons of soluble saline matter. It is anticipated that in the coming season, with

the drainage system in full working order from the outset, results will be even more satisfactory.

It should be noted that over 80 per cent. of the saline matter removed consisted of common salt and white alkali, as might indeed have been anticipated from the composition of the soluble salts known to be present in the soil. It is satisfactory to note, too, that appreciable quantities of black alkali (sodium carbonate) passed into the drains, implying that heavy and costly dressings of gypsum will be unnecessary. It is clear that the comparatively light texture of the land protects it from mechanical injury by this salt.

All analytical work connected with this report has been conducted in the laboratory of the Director of Chemistry, whilst the supervision of the work and the collection of data have been in the able hands of Mr. C. G. Savage, Manager of the Berri Experimental Orchard.

This report may be looked upon as a preliminary report which will be followed by others according as results and circumstances appear to warrant them.

SUMMARY.

The results indicated herewith may be summarised as follows:—

1. An attempt has been made to reclaim 4 acres to 5 acres of orchard land rendered sterile from the rise of salt subsequent to the application of irrigation.
2. The areas concerned are situated on a moderate hill slope: surface contours indicate a mean surface fall of 44in. to the chain in one direction, and 20in. in another.
3. Corresponding clay subsoil contours indicate mean falls of 39in. and 15in. respectively.
4. It follows that the clay tends to rise against the surface grade, giving rise to defective drainage conditions, and in time to salt troubles.
5. A complete drainage scheme has been laid out to cope with this difficulty.
6. Undue surface steepness has been overcome by the use of a succession of observation pits: where possible, a grade of 3in. to 4in. to the chain has been adopted for the pipes, and in no case has a grade of 9in. to the chain been exceeded.
7. According to position, 3in., 4in. and 6in. pipes have been used.
8. All subsidiary drains have been made to empty into observation pits.
9. Sweet soil adjoining the salt patch has been shown to have a mean concentration of soluble salts of 50 parts in 100,000 parts, 10 of which are black alkali, 8 white alkali and 6 common salt.

10. In soil previously barren, but now carrying rough winter vegetation, salt concentration in first foot of soil corresponds to 59 in. 100,000 parts, but in the third six inches to 112 in. 100,000 parts. It is inferred that seven or eight years of winter rains, and the absence of summer irrigation have sweetened the first foot of soil, and rendered shallow-rooted surface vegetation possible.

11. In two barren portions of the salt patch the mean salt concentration was found to be 1,059 and 234 parts respectively in 100,000.

12. In one spot 18 in. of soil carried soluble saline matter at the rate of 51,614 lbs. to the acre; and in another 15 in. of soil carried soluble saline matter at the rate of 9,492 lbs. to the acre.

13. In both cases common salt 30,209 lbs. and 4,688 lbs., respectively, to the acre was the chief constituent.

14. Black alkali was present abundantly on one spot—2,520 lbs. to the acre—but not in another—146 lbs. to the acre. Its absence in the latter is attributable to the presence of an abundance of calcium sulphate in the soil.

15. Leaching operations started late in the season, but were responsible for the removal of 9,020 lbs. of soluble salts: winter rains were responsible for an additional 5,152 lbs., representing in the aggregate 6½ tons of soluble saline matter.

16. The chief constituents removed were common salt (7,356 lbs.), sodium sulphate (4,075 lbs.), and sodium carbonate (1,018 lbs.).

17. It is anticipated that the results will be more satisfactory in the coming season, as the drainage system will be in good working order from the outset of irrigation operations.

APPENDIX.

The Manager of the Berri State Orchard (Mr. C. G. Savage) supplies the following additional information:—

Plants found growing on the area in the salt patch, now carrying coarse winter herbage, but previously sterile, and concerning which analytical data have already been given, are chiefly—sow thistles, barley grass and several species of annual salt bushes.

Several fig trees in the neighbourhood of the southern end of pipe track No. III. lost all their leaves in December under the influence of the salt. The drains were not completed in this section until early January. Late in February these trees sent out new leaves, and continued covered with healthy green foliage until late autumn. Similarly, orange trees which were dying off in the southern minor salt patch, made new growth last summer, and now present generally a much healthier appearance.

Barley was sown over the whole of the salt patch and on the land immediately adjoining it in April, 1923. The barley germinated normally on the adjoining sweet land and on land within the salt patch which had previously carried coarse herbage, and also along the furrows used for applying the last irrigation.

Barley did not germinate on the bare salt land until the 21st of June, i.e., 62 days after seeding, over which interval 2.34 in. of rain had fallen and more or less sweetened the surface layers of soil. This barley continued to grow until hot weather set in, when it was scorched off. It is clear, therefore, that there is still much salt to be removed.

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MALTING BARLEY.

In forwarding a few samples of malting barleys to the Department of Agriculture, for trial in the South-East, Messrs. Tooth & Company, Limited, of Kent Brewery, Sydney, New South Wales, made the following observations on malting barley:—

“The question of harvesting we consider one of the most important features in barley growing, and always stress upon the farmer the need for particular care when performing this operation.

It is in harvesting that most judgment and care are requisite with a malting-barley sample, and an otherwise good yield of grain may be spoilt through carelessness and inattention at almost any stage before the barley is safely in the malthouse. The malster much prefers to have barley which is cut, dried in the field, and stacked for from six to eight weeks before it is threshed. In the stacks barley becomes more matured and mellowed in quality, and therefore makes much better malt, and this particular effect can only be obtained by the process mentioned. Hard, flinty grain is most undesirable, and barley which has been stacked is far less likely to be objectionable in this respect than that which has been harvested by a stripper-harvester. The fact that strippers are almost the only machines in use in certain districts has been somewhat of a drawback to farmers. Nevertheless, it is quite possible to obtain good results with barley harvested by stripper, and during 1909 and 1910 some excellent samples were taken off by this means by farmers who otherwise could not have grown the crop, owing to the absence of threshing plants in the district. The stripping requires to be carefully done, and by experienced hands. The machine must not be driven too fast, and the beaters should be set well off the concave, so that the grain is not threshed too closely. The fact cannot be too much impressed upon the farmer that barley which has been bruised, nipped off at the ends, or broken, is absolutely useless for malting, as it will not germinate.

WHEN TO HARVEST MALTING BARLEY.

Whatever the method employed, barley should be ripe, but not over-ripe, when harvested. Nothing is gained by harvesting barley dead ripe, for it is not then improved in quality, and a large proportion will be shed before it reaches the stack. It is better to commence stripping or cutting just before it becomes thoroughly ripe, and it should be got off as speedily as possible, so that the grain may be as nearly as possible of uniform ripeness. If cut, five or seven days at the extreme should cover the operation.

It is worthy of special note by growers that barley is fit for harvesting long before wheat or oats.

STACKING BARLEY.

When harvested by reaper and binder, the barley must be placed in stooks, to avoid staining by the sheaves lying on the ground, and so remain until thoroughly dry. It should then be stacked for from six to eight weeks. The stacks must be effectively thatched, or otherwise protected from the weather, as barley cannot be stacked to resist the weather without protection, for the straw will not turn water like wheat straw, and a little rain on it in the stacks is bound to do harm by discoloring the grain. Large stacks are preferable, as there is less exposed, and the mellowing effect on the grain is more thorough. If it is not thoroughly dry before being stacked it will probably heat in the stack and be rendered useless for malting. Care should be taken in the event of there being any discolored sheaves, not to include them with the sound sheaves. It is much better to place the former on one side for use as feed, rather than run the risk of spoiling a first class sample, and so decreasing the value of the whole of the barley.

In many instances farmers find half of their grain crops ready to harvest and the other half in a green stage, but as the result on the malster's 'floor' is the same as when the grain is sown, it is of great importance that, as far as possible, the barley harvested should be of even ripeness or maturity. It is not possible to make first class malt from barley which does not germinate evenly. This evenness of maturity can be attained with barley which has been harvested with a binder, by turning the sheaves after they have stood in the stooks for about three days—the inner portions of the sheaves should be turned to the outside, and sheaves forming the southern halves of the stooks should be brought round to the north, so that the sun may reach all, and the barley be properly matured. All barley crops cut should be treated in this manner to obtain best results for a good malting sample.

THRESHING MALTING BARLEY.

A first class sample of barley may be rendered valueless for malting by being injured in threshing, consequently this work should be in the hands of experienced men, and every care and constant supervision exercised. Complaints are frequently made by brewers and malsters of the injury done to barley in the process of threshing, owing to the fact that the drum of the threshing machine is set so close that many of the grains are cracked or broken. The presence of such injured grains greatly reduces the value of the barley for malting purposes, as the broken, bruised, or skinned grains fail to germinate, and soon show signs of mould, thus leading to unsoundness in the malt, and bad results in the brewery. The injury caused by overdressing is not limited to grains which are actually broken; grains closely nipped at one or both ends, or such as have been bruised or peeled are equally objectionable. In fact, if by too vigorous threshing the husk of the barley is damaged, although the damage may not be apparent, the irregularities in the malting, accompanied by the production of mould, are likely to result.

The concave of the machine must not be set too close to the drum, and the revolution of the drum should be at least 200 less than the number required for threshing wheat.

When farmers commence a day's threshing, they should at the outset, and repeatedly during the day, carefully examine the grain, and if any signs of injury are observed, the concave of the drum of the machine should be slightly opened. It is better that part of the beard should be left adhering to the grain than that any risk should be run of injuring the reputation and value of home-grown barley on account of broken and chipped grains.

A new machine will break the grain more than a machine which has been used for a time, and in which the roughness of the beater has been worn off. On the other hand, when a machine has been much worn, the centre of the drum and concave, having had the most work in consequence of the feeding being necessarily more in the centre than at the ends of the drum, will have a greater space than at the two ends, and if the centre threshes clean, the ends will be too close and damage to the grains will occur. This fault can only be remedied by putting on new drum beaters and concave ribs.

Great attention should also be paid to regularity of feeding. The thrasher should be driven at an even speed, and proper care should be taken over the adjustment of the several parts of the machine. It is not only in the drum of the machine that unnecessary damage to the kernel takes place, but also in the barley awner or hammer, through which the grain subsequently passes. Here, if the beaters are set too closely, and the barley is roughly handled, 'nibbling' will take place.

Different varieties of barley require different treatment, so that those in charge of the threshing should make a point of closely examining the sample, and if this is injured in any way, of ascertaining in what part of the machine the injury occurs, altering the setting until it is remedied.

As a further guide in threshing, it may be added that on no account should the barley be rushed through the machine, as it is better to be content with a moderate output and a more perfectly threshed sample. It is important that the machine should be thoroughly clean in all parts before commencing the day's threshing.

The screen should be open and seconds and thirds taken out, for the more even the sample the better the price the barley will bring. If the barley is smutty do not put it through the 'polisher,' but through the 'screw,' for then the smut balls or bladders will not be broken, and the grain discolored. If the seed has been properly pickled before sowing, there should be no smut whatever.

It is worthy of note that straw from barley is about equal to that from wheat, for feed purposes."

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**FIRST REPORT ON APPLE GROWING AT KYBYBOLITE
EXPERIMENTAL FARM.**

[By L. J. Cook, Manager.]

During the year 1908 orchard land at Kybybolite Experimental Farm was prepared and planted; about 10 acres with apples, mainly with the view of testing apple growing commercially in the district. Also, about an acre of varieties of mixed stone and pip fruits and vines were included to supply the homestead with fruit, and to demonstrate methods of treatment and attention of trees to agriculturists of the South-East. The orchard is 299 feet above sea level, and the average rainfall for the past 17 years has been 22.43 inches. There is a gradual slope facing the West. The soil is of a free nature overlying a shallow stratum of ironstone gravel, which in turn rests on

a red or yellow clay of a tenacious character. The western end has a surface soil lighter in character than the other parts of the orchard.

During the seasons 1905 and 1906 cereal crops were grown on the area, and in 1907 a grazing crop of rape and mustard was carried. Preparatory to planting, the land was subsoiled to a depth of 15in. to 20in. The great majority of the trees planted consisted of export apples of the three well-known kinds—*Cleopatra*, *Jonathan*, and *Dunn's Seedling*, and a few rows of *Rokewood*, *Gravenstein*, *Robinson*, *Pippin*, *King of Tompkins County*, *Scarlet Nonpareil*, and *Rome Beauty* were included. All the trees were planted 20ft. apart on the septuple system, and the rows of varieties were alternated, so that no two rows of any one variety are adjacent to each other.

The orchard has been surrounded by breakwinds of almonds on the north-west side, *Pinus insignis* on the south-west, and *Cupressus sempervirens* (Cypress) on the north-east, and of these the *Pinus insignis* has made the most effectual breakwind.

Unfortunately, notes on the working of the orchard and handling of the trees during their early life are not at hand, but of late years the trees have thrived comparatively well, and careful records of the produce received, and the work performed during the past five seasons, enables some more or less interesting figures to be tabulated.

CULTURAL TREATMENT.

The orchard is ploughed once or twice a year, and cultivated regularly throughout the spring and summer months, so as to conserve as much as possible of the soil moisture for the sole use of the trees and their fruit. The trees are subjected to an annual pruning, sufficient to maintain them in good healthy condition, care being taken to eradicate all signs of "dieback" from which trouble the trees have suffered in the past.

Frequent sprayings have been necessary to keep the collin moth in check, and also constant attention has had to be given to the woolly aphides, which unfortunately continue to maintain themselves fairly plentifully on the trees. Blackleaf 40 has been sprayed on the trees, and the kerosene swab has been used repeatedly, but although these remedies have kept the aphides in check, they have so far failed to eradicate it. However, we have only had a comparatively low pressure hand pump for applying sprays, but given a high pressure power pump we could apply red oil, as well as the tobacco spray, much more effectively and quickly.

Excepting the spraying outfit, the orchard is fairly well equipped with implements as well as a most serviceable store room for the fruit, with verandahs closed in, to use as a packing shed. A good proportion of our fruit has been sold locally, whilst the bulk of our heavy crops has been graded, packed, and cold stored at the Government Works, Light Square.

The following table shows the total production during the past five seasons, of both windfall and picked fruit received from all varieties of apple trees growing on the main area, outside the small varietal block, and includes all manured as well as unmanured trees:

Table 1.—Yield of Apple Varieties Kyhybaltie, Seasons 1918-1923.

Variety.	No. of trees.	1918-19.			1919-20.			1920-21.			1921-22.			1922-23.			1918-23.		
		Total Prod.		Average per Tree.	Total Prod.		Average per Tree.	Total Prod.		Average per Tree.	Total Prod.		Average per Tree.	Total Prod.		Average per Tree.	Total Prod.		Average per Tree for 5 Years.
		a.	b.	lbs.	Bush.	lbs.	Bush.	lbs.	Bush.	lbs.	Bush.	lbs.	Bush.	lbs.	Bush.	lbs.	Bush.	lbs.	a. b.
Cleopatra	400	442	23	44.2	487	20	48.7	328	27	32.8	987	25	98.7	926	21	92.6	3,172	36	7 37 63.4
Gravenstein	21	5	6	9.8	21	9	40.4	18	0	34.3	14	39	28.5	51	22	98.2	110	36	5 11 42.2
Dunn's Seedling ..	168	99	36	23.8	102	15	21.4	110	34	26.4	235	20	56.1	291	1	69.3	839	26	5 0 40.0
Jonathan	417	232	25	22.3	349	29	33.5	142	6	13.6	570	2	54.7	518	28	52.6	1,843	19	4 17 35.4
Rokewood	63	26	15	16.7	58	2	36.9	31	7	19.8	67	5	42.6	63	23	40.4	246	12	3 36 31.3
Ridgston Pippin ...	21	4	32	9.1	21	3	40.1	5	22	10.9	9	39	18.6	20	16	57.9	71	23	3 16 27.3
Rome Beauty	26	15	24	31.2	18	16	36.8	6	32	13.6	11	28	23.4	13	39	27.9	66	19	3 13 26.6
King of Tompkins County	21	1	25	3.1	6	34	13.0	2	18	4.7	25	11	48.1	29	18	56.1	65	26	3 5 25.0
Scarlet Nonpareil ..	21	2	36	5.5	19	30	37.6	0	37	1.8	19	6	36.5	22	26	43.1	65	15	3 4 24.9
Totals	1,152	831	22	28.9	1,084	38	37.7	646	23	22.5	1,941	6	67.4	1,577	34	68.7	6,482	3	5 25 45.0

From the above table we notice that the last two seasons have been productive years, returning the general average yield over the whole

1,152 trees, of nearly $1\frac{3}{4}$ cases per tree. 1918 and 1920 were comparatively poor seasons, whilst 1919 was a little below average. The Cleopatra variety stands out as the most prolific bearer, being the heaviest yielder in three out of five seasons under consideration, and Gravenstein holds the pride of position in the other two seasons. The fact that the yearly average of Cleopatras has been half a case above any other variety, and also that over one-third of the orchard consists of this variety, has kept the average per tree of the whole orchard as high as 45lbs. per tree, which is above the average production of any other variety. It must be remembered that the Cleopatras are not in a block on the orchard, but that over half of the area there is a row of Jonathans on both sides of each row of Cleopatras, and over the other half there is a row of Jonathans on one side, and Dunn's Seedling on the other.

In estimating the value of the above variety yields, consideration has had to be given to the windfalls, and table 2 shows the total windfalls from each variety for the five seasons, together with the percentage picked in comparison with the percentage of windfalls. It is to be noted that most bird picked and moth infested fruits have been included amongst the windfalls, for when picking all noticeably affected apples are dropped, and weighed with the actual windfalls.

Table 2.—Percentage of Windfall Apples, Kybybolite, 1918-1923.

Variety.	No. of Trees.	Total Production for 5 years.		Total Windfalls for 5 years.		Per Cent. of Sound Fruit.	Per Cent. of Windfalls.
		Bush. lbs.		Bush. lbs.			
Rokewood	63	246	12	20	21	91.7	8.3
Scarlet Nonpareil	21	65	15	10	22	83.8	16.2
Rome Beauty	20	66	19	13	24	79.5	20.5
Jonathan	417	1,843	10	571	12	69.0	31.0
Ribston Pippin	21	71	23	22	29	68.3	31.7
King of Tompkins County	21	65	26	22	9	66.1	33.9
Cleopatra	400	3,172	36	1,107	7	65.1	34.9
Dunn's Seedling	168	839	26	366	36	56.3	43.7
Gravenstein	21	110	36	55	11	50.2	49.8
Totals	1,152	6,182	3	2,190	11	66.2	33.8

The above table shows that we have had considerable loss through the ravages of wind and birds, especially from the two varieties Gravenstein and Dunn's Seedling. In estimating value of production, 1s. per case has been allowed for the above windfalls, because if they fall on loosely cultivated soil, and are gathered soon after falling, they certainly have some commercial value when sold for immediate consumption. Moreover, they have a value as pig food.

The following list contains the actual average net prices of sound and reject apples sold from the orchard each year after deducting all costs of cases, packing, and storage, except the labor of picking and grading:—

Season.	Per Case.
1918-19	5 6 ²⁷ / ₁₀₀
1919-20	4 11 ⁷⁹ / ₁₀₀
1920-21	5 7 ⁴⁷ / ₁₀₀
1921-22	4 10 ⁴² / ₁₀₀
1922-23	4 7 ⁷⁷ / ₁₀₀
Average for five years	5 1 ¹ / ₂

Table 3.—Value of Fruit from Apple Varieties, *Kypholitic*, Seasons 1918-1923.

Variety.	No. of Trees.	Total Apples Picked.	Price.		Value of Picked Apples.		Total Windfall Apples.		Price.		Value of Windfalls.		Total Value of Fruit.		Average Annual Value of Fruit.		Average Annual Value per Tree.		Average Annual Value per 125 Trees.	
			£	s. d.	£	s. d.	Bush.	lbs.	£	s. d.	£	s. d.	£	s. d.	£	s. d.	£	s. d.	£	s. d.
Cleopatra	400	2,065 26	5	11	529	6 10	1,107	7	1	0	55	7 2	584	14 0	116	18 10	5	10.1	36	10 2
Rokewood	63	225 31	"	"	57	17 1	20	21	"	"	1	0 6	58	17 7	11	15 6	3	8.8	23	6 8
Jonathan	417	1,271 38	"	"	325	18 9	571	12	"	"	28	11 3	354	10 0	70	18 0	3	4.8	21	5 0
Dunn's Seedling	168	472 30	"	"	121	2 10	366	36	"	"	18	6 11	139	9 9	27	17 11	3	3.85	20	15 1
Gravenstein	21	55 25	"	"	14	5 1	55	11	"	"	2	15 3	17	0 4	3	8 1	3	2.9	20	5 2
Rome Beauty	20	52 35	"	"	13	11 0	13	24	"	"	0	12 7	14	4 7	2	16 11	2	10.1	17	15 2
Scarlet Nonpareil ...	21	54 33	"	"	14	1 0	10	22	"	"	0	10 7	14	11 7	2	18 4	2	9.3	17	6 10
Ribston Pippin	21	48 34	"	"	12	10 4	22	20	"	"	1	2 9	13	13 1	2	14 7	2	7.2	16	5 0
King of Tompkins County	21	43 17	"	"	11	2 7	22	9	"	"	1	2 3	12	4 10	2	9 0	2	4	14	11 8
Total all varieties.	1,152	4,291 32	5	12	£1,099	15 6	2,190	11	1	0	£103	10 3	£1,209	5 9	£241	17 2	4	2.4	£26	5 9

The above table shows the total value of produce received from each variety, and from it has been computed the annual value per tree and the value per acre of 125 trees. In value as well as in production the Cleopatra variety stands out above the others, but the Rokewood and Jonathan varieties have exceeded the Dunn's Seedling and Gravenstein.

The general average return of 4s. 2.4d. per tree for a production of 45lbs. of fruit as shown in Table 1, shows the general average value of apples for the five years at 3s. 9d. per case.

MANURING OF APPLE TREES.

During 1914 a test of manuring for the three varieties of export apples, *Jonathan*, *Cleopatra*, and *Dunn's Seedling* was commenced. The mineral fertilisers, viz.:—Lime, superphosphate, potassium sulphate, and ammonium sulphate have been applied to various of each variety in both light and heavy dressings, and in such a way as to test each class of manure separately, and with the others. Also, the organic farmyard manure and green manuring have been tried both with and without lime. Unfortunately, the manures have not been applied regularly every year, but they were applied in 1914, 1915, 1918, 1919, 1920, and 1922. Altogether six applications have been given, and Table 4 shows the class and quantity of manuring, with the average annual produce received during the past five seasons from all trees so manured. The value per acre and per tree has been computed from the general average value of 3s. 9d. per case, secured during the past five seasons. By subtracting the value of fruit received from the no manured trees, and also the value of manure applied, the actual profit per acre due to manuring is shown.

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Table 4.—Results of Manuring Apple Trees, Kybybolite, Seasons 1918-23.

Kind of Manure and Quantity Applied per Acre at each application.	No. of Trees.	Average Annual Yield Per Tree.		Price Per Cwt.	Annual Value Per Tree.		Annual Value Per Acre of 125 Trees.		Increase per Acre Due to Manure.	Cost of Manure.		Profit Per Acre Due to Manure.	
		Lbs.	s. d.		s. d.	£ s. d.	£ s. d.	£ s. d.		£ s. d.	£ s. d.	£ s. d.	£ s. d.
super. & 10lbs. lime	46	62.8	3 9		5 10.65	36 15 11	16 2 3	2 10 3	13 12 0				
super. & 14lbs. pot.	37	62.1	"		5 9.86	36 7 8	15 14 0	2 13 9	13 0 3				
super. & 1lb. amm.	28	61.3	"		5 8.96	35 18 4	15 4 8	2 5 9	12 18 11				
super. 1lb. amm. & 11lbs. pot. sul.	35	61.4	"		5 9.07	35 19 6	15 5 10	4 2 9	11 3 1				
farmyard manure.	11	55.4	"		5 2.32	32 9 2	11 15 6	3 2 6	8 13 0				
lime	42	52.4	"		4 10.95	30 14 1	10 0 5	1 13 6	8 6 11				
super. 1lb. amm. & 11lbs. pot. sul.	33	59.5	"		5 6.94	34 17 3	14 3 7	5 16 3	8 7 4				
super. 1lb. amm. sul.	63	48.1	"		4 6.11	28 3 8	7 10 0	0 12 10	6 17 2				
super.	126	46.2	"		4 3.97	27 1 4	6 7 8	0 5 7	6 2 1				
super.	42	46.4	"		4 4.2	27 3 9	6 10 1	0 16 9	5 13 4				
pot. sul. & 1lb. amm. sul.	31	49.5	"		4 7.69	29 0 1	8 6 5	3 6 0	5 0 5				
super. 1lb. pot. sul.	63	44.3	"		4 1.84	25 19 2	5 5 6	0 11 9	4 13 9				
manure every two years	42	43.6	"		4 1.05	25 10 11	4 17 3	0 7 6	4 9 9				
manure and 10lbs. lime every two years	32	44.7	"		4 2.29	26 3 10	5 10 2	1 4 3	4 5 11				
super. 1lb. pot. sul. & 1lb. amm. sul.	63	41.2	"		3 10.35	24 2 10	3 9 2	0 19 0	2 10 2				
pot. sul. & 1lb. amm.	63	39.4	"		3 8.32	23 1 8	2 8 0	0 13 5	1 14 7				
farmyard manure & 10lbs. lime	18	45.5	"		4 3.19	26 13 3	5 19 7	4 16 0	1 3 7				
manure	126	35.3	"		3 3.71	20 13 8	---	---	---				

The value of manures allowed in above table have been as follows:—
Superphosphate, £5 per ton.; ammonium sulphate, 26s. per cwt.;
potassium sulphate, 22s. per cwt.; agricultural lime (air slacked), £3
per ton; farmyard manure, 10s. per ton; green manure (peas), 15s.
per acre every two years.

From Table 4 it is apparent that good repayment can be secured
for money outlaid on fertilisers, and it is not surprising that the two
fertilisers, lime and superphosphate, should be at the top of the list.
These two have proved themselves beneficial to general crop produc-
tion in the district, and it is probably natural that they should prove
most beneficial in the orchard. There is not a great deal of difference
in the general growth and appearance of the trees under the different
manurings, but the better manured rows have the better and healthier
appearance. One point is particularly noticeable, the weed sorrel
gives us considerable work and trouble to keep under, and where lime
has been applied this work and trouble has been very much lessened.
It is apparent that potassic and nitrogenous manures are beneficial,

but without the addition of phosphatic fertiliser the profit that they produce is very small. Lime apparently unlocks the potash and nitrates already in the soil, and is the cheaper to apply.

COLD STORAGE OF APPLES.

During 1922, 433 cases of apples were stored at the Light Square Cold Stores, and sold during the year on the Adelaide market. As the charges, and costs of this method of disposing of apples may prove of interest to some growers, I am including herewith a general resume of the various charges incurred, and prices received by us for these apples. The following—209 cases, Jonathan; 177 cases, Cleopatra; 20 cases, Dunn's Seedling; and 18 cases, Rokewood were sent to the stores during April and May. The bulk of the apples, 378 cases of Jonathan and Cleopatras, was sold out about the middle of July at 10s. and 9s. per case respectively. The Dunn's Seedlings were sold about mid-September at 10s., and during November the balance of Jonathan was sold at 10s., and the Rokewoods at 7s. 7d. per case. The whole 433 cases realised the gross return of £204 17s. 8d., or 9s. 5½d per case. Against this the following charges were credited:—

	£	s.	d.		s.	d.	
Storage	30	1	10	or	1	4.67	per case
Railage—Kybybolite-Mile End	15	3	0	„		8.4	„
Cartage---Rail to Stores and Stores to Clients	3	1	0	„		1.68	„
Commission	10	5	7	„		3.5	„
Wrapping Paper, Nails, &c.	6	6	4	„		3.5	„
Cases (new soft wood)	27	10	3	„	1	3.25	„
Total,	£92	8	0	„	4	3.2	

These charges include all except the labour of picking, packing, and grading at the Farm, and leaves us a net return of £142 9s. 8d., or 5s. 2.3d. per case. The charges for storage of the individual varieties were approximately as follows:—Jonathan, 1s. 7½d. per case; Cleopatra, 1s. 1d. per case; Dunn's Seedling, 1s. 3d. per case; Rokewood, 1s. 10d. per case. Comparing these with the prices secured for the different varieties, we find that we received approximately the following net returns:—Jonathan, 5s. 6d. per case; Cleopatra, 5s. per case; Dunn's Seedling, 5s. 10d. per case; Rokewood, 2s. 10d. per case. These prices were secured for portion of our sales during one year only. In future possibly we shall be able always to sell the varieties separately, so that an idea of the selling price of each particular variety can be secured.

In closing this report, I particularly wish to mention the work of our orchardist, Mr. S. C. Billingham, who has been very painstaking with the work of the orchard, and has helped considerably in recording and compiling the above figures.

THE AGRICULTURAL BUREAU OF SOUTH AUSTRALIA.— DISTRICT CONFERENCES.

The last of the District Conferences of the Agricultural Bureau of South Australia for the year 1923 was held at Veitch during October. This was preceded by gatherings at Minnipa during September, and at Balhannah during October. In all, 12 Conferences were held during the year, and an outstanding feature was the keen interest taken in these gatherings. This was evidenced not only by the attendances of delegates, which, with one exception, were particularly large, but also by the tenor of the discussions, and questions on matters of agricultural interest.

CENTRAL EYRE PENINSULA BRANCHES.

The fifth Annual Conference of Central Eyre Peninsula Branches was held at the Government Experimental Farm, Minnipa, on September 27th and 28th. Some 300 delegates representing all parts of the Peninsula attended. The first day was devoted to a consideration of papers and questions submitted by Branch members. During the morning of the second day, delegates made a tour of inspection of the farm under the direction of Departmental Officers, the remainder of the day being devoted to Conference business. Captain S. A. White, C.M.B.O.U. (Vice-Chairman of the Advisory Board of Agriculture), delivered the opening address, and the Director of Agriculture (Professor A. J. Perkins) joined in welcoming delegates and visitors to the Farm. Papers, "How can country life be made more attractive to young people?" by Mr. E. J. Barraud (Lipson Branch), and "Sheep selection for the Farmer," by Mr. L. Pearce (McLachlan Branch), were read. A large list of questions previously submitted by Branches was replied to by the visiting Officers of the Department, which included the Director of Agriculture (Professor A. J. Perkins), the Superintendent of Experimental Works (Mr. W. J. Spafford), the Government Dairy Expert (Mr. P. H. Suter), Assistant Government Veterinary Surgeon (Mr. R. H. F. MacIndoe, B.V.Sc., M.R.C.V.S.), and the Secretary, Advisory Board of Agriculture (Mr. H. J. Finnis). Captain S. A. White, during the last session of the Conference, delivered an address illustrated with lantern views, "Across Australia by Motor." The following resolutions were carried:—"That in the opinion of this Conference it is desirable that greater activity be shown by the Government in the Wool Industry, by appointing additional instructors in wool and wool classing"; "That the minimum age of members attending the Winter School at Roseworthy Agricultural College should be reduced from 21 to 18 years"; "That we guarantee to pay a nominal fee for the services of a Veterinary Surgeon, provided one is stationed on Eyre

Peninsula"; "That the Railways Department be asked to place railway facilities at the disposal of the Branches to the north and north-west of the Conference Centre"; "That this Conference protests against the freights and fares charged by the Adelaide Steamship Company"; "That an instructor in fruit growing and gardening be appointed for Eyre Peninsula, or that a Horticultural Officer visit the Peninsula from time to time, providing sufficient inducement offers"; "That this Conference re-affirms the resolution carried at the 1922 gathering, 'That owing to the urgent need for water, this Conference urges that a pumping station be placed at Poldia, and water pumped from there to the railway station'"; "That there be a Farmers' School at the Minnipa Experimental Farm, immediately prior to the Annual Conference, to be run on the same lines as the Winter School at Roseworthy Agricultural College, as soon as circumstances permit." It was decided that the 1924 Conference should be held at Minnipa during the last week of September.

HILLS BRANCHES.

Representatives of the Lenswood and Forest Range, Meadows, Morphett Vale, Uraidla and Summertown, Iron Bank, Longwood, Blackwood, Cherry Gardens, Clarendon, and Balhannah Branches attended the Annual Conference of Hills District Branches at Balhannah on the 11th October. Mr. H. N. Wicks presided, and was supported on the platform by Captain S. A. White, C.M.B.O.U. (Vice-Chairman of the Advisory Board of Agriculture), the Director of Agriculture (Professor A. J. Perkins), the Horticultural Instructor (Mr. George Quinn), the Poultry Expert (Mr. D. F. Laurie), Mr. H. Wicks (Member of the Advisory Board of Agriculture), and the Secretary, Advisory Board of Agriculture (Mr. H. J. Finnis). After the opening address, delivered by Captain S. A. White, the following papers were read:—"The Bureau Member on the Farm," Mr. L. C. Spencer (Clarendon); "Potato Culture," Mr. George Prentice (Uraidla and Summertown); "Better Utilization of Land in the Southern District," Mr. A. H. Furniss (Morphett Vale); "Milk and its Products," Mr. A. Bohme (Balhannah); "Phylloxera," Mr. H. Wilson (Morphett Vale); "Onion Growing," Mr. W. Rollbusch (Balhannah). Resolutions as follows were carried by the Conference:—"That more space in the *Journal of Agriculture* be allotted to mixed farming and fruit growing"; "That the Government take more drastic action in enforcing the Fruit Diseases Act, and prevent the sale of codlin moth infected fruit elsewhere than to a factory"; "That copies of the report of the investigations recently carried out in relation to the refrigeration of fresh fruit be obtained and forwarded to all Branches of the Agricultural Bureau interested in the export of apples." The evening session was in the hands of Captain S. A. White, who delivered an illustrated lantern lecture, "Across Australia by Motor." It was decided that the 1924 gathering should be held at Meadows.

MURRAY MALLEE LANDS DISTRICT CONFERENCE.

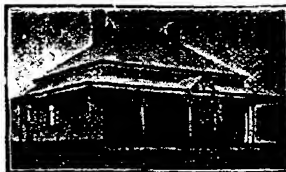
A Conference of representatives of Branches situated in the Murray Mallee Lands was arranged to be held at the Government Experimental Farm, Veitch, on October 23rd and 24th. Unfortunately, from the point of view of attendance, farmers were busy with the hay harvest which had already commenced in many parts of the district. The opening address was delivered by the Director of Agriculture (Professor Arthur J. Perkins). Papers were contributed by Messrs. S. Willison (Alawoona), "The Farm Orchard and Vegetable Garden," and E. L. Cowled (Borrika), "Advisability of Good Fellowship and Sociability amongst the Farming Community." Under the guidance of the Officers of the Department, the cropping on the farm was inspected. The representatives of the Department present, namely, the Director of Agriculture (Professor Arthur J. Perkins), the Principal of the Roseworthy Agricultural College (Mr. W. J. Colebatch, B.Sc. (Agric.), M.R.C.V.S.), the Superintendent of Experimental Work (Mr. W. J. Spafford), the Assistant Government Veterinary Surgeon (Mr. R. H. F. MacIndoe, B.V.Sc., M.R.C.V.S.), the Manager of the Experimental Farm, Veitch (Mr. L. Smith), and the Secretary, Advisory Board of Agriculture (Mr. H. J. Finnis), replied to numerous questions. Resolutions were carried requesting the Department of Agriculture to compile and publish a list of "red" varieties of wheat, and of "white" varieties which were likely to prove efficient substitutes for same; and also urging that railway and telephone rates be reduced. It was decided that the next gathering should be held at Veitch during the first week in October, 1924.

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HEAD OFFICE:

**PARADE,
NORWOOD.**

ADVISORY BOARD OF AGRICULTURE.

The monthly meeting of the Advisory Board of Agriculture was held on Tuesday, October 9th, 1923, there being present Capt. S. A. White (Vice-Chairman), Professor Arthur J. Perkins (Director of Agriculture), Col. Rowell, Messrs. C. J. Tuekwell, H. Wicks, W. J. Colebatch (B.Sc. (Agric.), M.R.C.V.S.), J. W. Sandford. Apologies were received from the Hon. G. F. Jenkins, M.P. (Minister of Agriculture), and Mr. W. S. Kelly.

Stock Diseases Act.—At the recent Conference of Southern Branches a resolution was carried asking that the provisions of the Stock Diseases Act should be rigidly enforced. The Chief Inspector of Stock (Mr. C. A. Loxton, B.V.Sc.), to whom the matter was referred, stated that all breaches of the Stock Diseases Act which came under the notice of the Department were dealt with. The District Inspector at Murray Bridge had been instructed to see that the provisions of the Stock Diseases Act (Compulsory Dipping) were observed. All reports of travelling stock affected with lice or tick would be investigated.

Cotton Cultivation.—The 1923 Conference of River Murray Branches of the Agricultural Bureau resolved that the Government be requested to undertake diversified experiments in the cultivation of cotton in the Murray Valley. The matter was forwarded to the Minister of Agriculture, who intimated that at the present juncture he did not feel justified in asking the Government to authorise any considerable expenditure in the direction indicated. Experiments were being carried out by private individuals, and also by the Cotton Association, and these should give results in the course of a year or two which would enable the Minister to decide what further expenditure was desirable.

Woolly Aphis.—The Blackwood Branch requested that experiments might be conducted at the Blackwood Orchard to ascertain whether crude salt dug into the soil around the tree would eradicate woolly aphis on apple trees. In the course of a report on the subject, the Horticultural Instructor (Mr. Geo. Quinn) stated that if suitable trees affected with woolly aphis could be located he proposed to try the salt dressing during the coming season in an empirical manner. The Secretary was instructed to forward a copy of Mr. Quinn's report to the Blackwood Branch.

Resolutions carried at the 1923 Congress.—(1) "That Branch members over age travelling to the Winter School at Roseworthy Agricultural College should be granted railway tickets at excursion rates." It was decided to refer the resolution to the Minister of Agriculture, suggesting that persons travelling to the Winter School should be entitled to railway tickets at excursion rates, irrespective of age. (2) "That the Education Department be asked to alter the date of the Michaelmas holidays to synchronise with Show week, so that

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IMPHEE	COW PEAS	SORGHUMS
SEED MAIZE	SWEET CLOVER	HUBAM
SUNFLOWER	PEANUTS	BUCKWHEAT

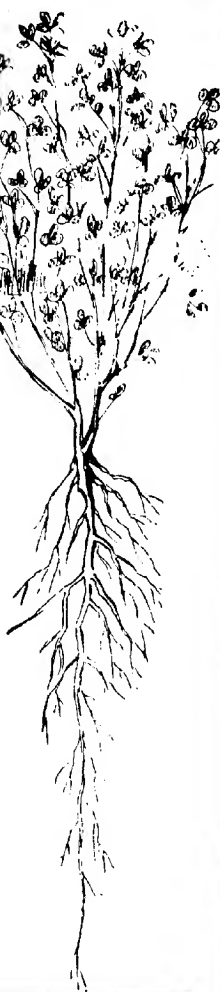
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country children might have an opportunity of attending the Show." It was decided to transmit the matter to the Minister of Education, seeking an expression of opinion from that Department. (3) "That action be taken to prevent the destruction of timber on all roads of the State." The Secretary was instructed to forward the resolution to the Minister with the strong support of the Board. (4) "That the Government be urged to evolve some scheme for planting trees on stock reserves." It was decided to ask for a report from the Woods and Forests Department on the possibility of the proposal. (5) "That the plant known as 'horehound' be proclaimed a noxious weed." It was decided to ask the Professor of Botany to report on the recommendation. (6) "That the Government be asked to enforce the regulations dealing with the compulsory spraying of orchards." The Board decided that the matter should be forwarded to the Minister supporting its previous recommendation. (7) "That this Conference is of opinion wheat sacks should be of uniform size." The Secretary was instructed to ask the Marama Branch to supply any information they had as to variation in the size of sacks. (8) "That the Government be asked to expedite the allotment of dry blocks in irrigation areas to overcome the shortage of wood supplies for settlers' use." It was decided to forward the resolution to the Minister of Agriculture requesting transmission to the Irrigation Commission. (9) "That instead of one-third of the members who are lowest in attendance at the meetings of the Branch being struck off the roll, only members who have failed to attend a certain percentage, say, 75 per cent. of the meetings be struck off at the annual revision of the rolls." The Board decided to adopt the suggestion of Congress. (10) "That the Government be asked to fix a standard for all spraying compounds, and that manufacturers be required to conform to same." The Secretary was instructed to obtain a report on the matter from the Horticultural Inspector (Mr. Geo. Quinn).

It was decided to transmit the following resolutions to the Minister of Agriculture for his information:—(a) "That it is desirable that legislation to provide for the compulsory registration of stallions be introduced." (b) "That the position of Mallee Lands Instructor be filled." (c) "That in the opinion of Congress, the Fertilizers Act should be amended in such manner as to require guarantees to indicate the phosphoric acid content instead of the tricalcic phosphate."

The following resolutions were received:—(a) "That the Government be asked to appoint one or more Wool Inspectors to be attached to the Department of Agriculture." (b) "That this Congress supports the Chamber of Commerce in its recent recommendation that the Chapman sack filled with grain be accepted by the handling agents regardless of weight." (c) "This Congress protests against the action of the Adelaide Steamship Company in raising the freights and fares on the vessels trading between Spencer Gulf Ports." (d) "That this Congress impress on the Government the necessity for destroying noxious weeds on railway lines and Crown lands in the whole of the

State." (e) "That dried fruit be carried on the railways at the same rate as fresh fruit." (f) "That all motor cars and motor vehicles be registered in the district council in which the owners reside, and that the money be retained by the council for the repair of roads in the same district."

Resolutions from Eyre Peninsula Conference.—(1) "That the minimum age of members attending the Winter School at Roseworthy Agricultural College should be reduced from 21 to 18 years." The Board expressed the opinion that it was not desirable that any alteration in the age should be made. (2) "This Conference re-affirms the resolution carried at the 1922 Minnipa Conference, 'That owing to the urgent need for water, this Conference urges that a pumping station be placed at Poldra, and water pumped from there to the railway station.' " It was decided to forward the resolution to the Minister of Agriculture for transmission to the Commissioner of Public Works. (3) "That this Conference resolves that the Railway Department be approached asking that railway facilities to be placed at the disposal of the Branches to the north and north-west of the Conference centre." The Board decided that the matter should be deferred until arrangements were being made for the preparation of the 1924 Conference agenda. (4) "That the Government be asked to station a veterinary surgeon on Eyre Peninsula, and that it be assured that the Conference, in making this request, agrees to the principle of payment by stock-owners for services rendered by such officers." It was decided to bring the resolution under the notice of the Minister of Agriculture.

The following resolutions were received:—(1) "That this Conference protests against the freights and fares charged by the Adelaide Steamship Company." (2) "That an instructor in fruit growing and gardening be appointed for Eyre Peninsula, or that a Horticultural Officer shall be sent over from the Department of Agriculture from time to time, providing sufficient inducement offers." (3) "That there be a Farmers' School at the Minnipa Experimental Farm immediately prior to the Annual Conference to be run on the same lines as the Winter School at Roseworthy Agricultural College, as soon as circumstances permit." (4) "That in the opinion of this Conference it is desirable that greater activity be shown by the Government in the wool industry by appointing additional instructors in wool and wool classing."

Water Conservat'ion Act.—The following resolution was received from the Smoky Bay Branch:—"That the Water Conservation Act Further Amendment Bill be protested against in relation to the taxing of lessees within a six-mile radius of Government tanks." The Board was of the opinion that this matter was one outside its scope, and instructed the Secretary to suggest to the Smoky Bay Branch that it should bring the resolution under the notice of the Members for the District.

Crop Reports.—Correspondence was received from the State Meteorologist requesting that a monthly summary of the conditions of the wheat crop in South Australia should be compiled for transmission by

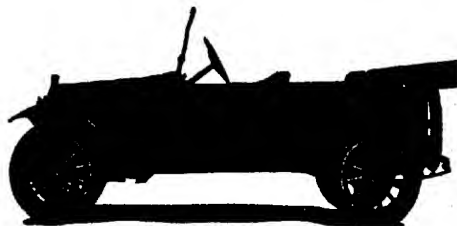
cable to England. The Director of Agriculture (Professor Arthur J. Perkins), in reporting on the matter, considered that the best means of supplying the information desired by Meteorological Department would be to ask Secretaries of the local Branches of the Agricultural Bureau situated in wheat-growing districts to fill in a postcard each month concerning the crop conditions. In addition, departmental officers and farm managers could give information as they were able, according to the areas which they had visited during the course of that month. The Board approved of the recommendation of the Director.

Next Meeting.—It was decided that the next meeting should be held at Roseworthy Agricultural College on Wednesday, November 21st.

New Branches.—Approval was given to the formation of Branches of the Agricultural Bureau at Poochera and Tweedvale, with the following gentlemen as foundation members:—Poochera—G. Gill, E. Brooks, V. Newbon, A. B. and G. B. Bockelberg, B. and S. Sinapins, W. A. Gosling, M. Prowett, S. Jay, F. R., C. H., and H. E. Gosling, A. Millman, A. Gosden, P. Lamphee, N. McCormick, R. Colbert, T. Moore, F. Voumard, P. A. and O. Donenberg, L. Humphries, A. and B. Williams, C. Bohlin.

Branches to be Closed.—It was decided to close the Kingscote and Mount Compass Branches.

New Members.—The following names were added to the rolls of existing Branches:—Windsor—K. Prime; Farrell's Flat—H. P. Monagan; Arthurton—J. T. Nellegan; Mypolonga—H. Daenke, H. Smelt, B. Ross, J. Turner, R. Edson, F. Reed, W. Nash; H. Schunke, P. H. Prosser, H. R. Beer; Blackwood—A. L. Warren, E. Place; Waikerie—J. H. Darling, A. Reaby, T. B. Schnider, J. N. Young, E. A. Halliday, C. P. Smith, A. Berndt, G. Searl; McLachlan—S. W. Green, P. Zerke, jun.; Milang—A. Mathews; Booleroo Centre—C. Llewellyn; Gumeracha—L. W. Wise, K. B. Symonds; Willowie—B. Bodell; Borriak—A. J. Amos, A. Hockham, H. C. Dohnt; Ballanah—H. Kerr, T. Drewitt; Allandale East—L. R. Kemp; Morchar—R. J. Hannitt, A. R. Davill; Coomandook—F. E. Ballard, J. Clark, J. Martin, R. Williams; Narrung—B. G. McNicol; Mount Gambier—A. C. Bigham, A. Bigham, J. Glanville, T. Elliott, E. Boardman; Virginia—E. Eekermann; Ramco—R. Piellar, A. Blenkiron; Kangarilla—H. H. Grimwood; Mannanarie—J. Clark, A. R. Bretag, F. Bretag; Mount Barker—E. Martin; Wirrulla—G. McCampbell, C. L. Campbell; Orreroo—F. Goodenough, E. Teague; Coonalpyn—J. H. Gibbs, P. J. Angel; Lameroo—H. P. Kirkwood, A. H. White, C. F. H. Bertram, S. Williams, H. A. V. Steer, J. G. Shearer, G. N. White; Mount Schank—A. A. McFadden, W. Alexander, R. J. Kuby, E. O. Pannell, J. Pudney, A. E. Hennessy, W. Cox, W. Donnan, J. M. Carliss; Kilkerran—J. W. Moody, F. H. Koch; McLaren Flat—R. J. Ward, R. Trott, B. Elliott, F. S. Crawford, C. Robertson, P. A. Wyatt; Maltee—L. Cranwell; Pinnaroo—S. A. Bone; Lone Pine—T. Edwards, O. Heinjus, D. Muir; Light's Pass—E. Polst, P. Spanagel, W. Koop; Shoal Bay—L. M. Chapman, W. R. Chapman, C. Bates.



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HUPMOBILE

IMPORTS AND EXPORTS OF FRUITS, PLANTS, ETC., SEPTEMBER, 1923.

IMPORTS.

Interstate.

Apples (bushels)	17,733
Bananas (bushels)	8,116
Oranges (bushels)	14
Passion fruit (bushels)	475
Pineapples (bushels)	1,300
Tomatoes (bushels)	34
Peanuts (packages)	2
Beans (packages)	2
Cabbages (packages)	6
Carrots (packages)	245
Onions (bags)	261
Potatoes (bags)	4,641
Turnips (packages)	16
Turnips, Swede, (packages)	1,636
Bulbs (packages)	26
Plants (packages)	30
Seeds (packages)	65
Trees (packages)	18
Wine casks, empty (number)	3,509

Rejected—1bush. bananas, 3bush. tomatoes, 1 package turnips, 3 packages swedes, and 48 second-hand bags.

Fumigated—1bush. oranges, 6 packages plants, 12 packages trees, and 12 wine casks.

Overseas.

Federal Quarantine Act.

Six thousand and one packages of seeds, etc.

EXPORTS.

Federal Commerce Act.

Fourteen thousand one hundred and eleven packages dried fruit, 668 packages citrus fruits, 2 packages plants, and 3 packages preserved fruit were exported to overseas markets. These were consigned as follows:—

London.

Dried fruit (packages)	11,561
Citrus fruit (packages)	15

South Africa.

Dried fruit (packages)	1,326
Plants (packages)	2

India and East.

Dried fruit (packages)	207
Sauce (packages)	3

New Zealand.

Citrus fruit (packages)	653
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Vancouver.

Dried fruit (packages)	500
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United States of America.

Dried fruit (packages)	500
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Egypt.

Dried fruit (packages)	17
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ORCHARD NOTES FOR SOUTHERN DISTRICTS.

[By C. H. BEAUMONT, Instructor and Inspector.]

The main work for the month will be to follow up the spraying operations of last month. Bordeaux Mixture is the material for fungus diseases, and may be used with effectiveness at any time, if it has a good start. For shot hole on plums and cherries it is best used after the trees have unfolded their leaves. It must be continued if a good effect is looked for with "Downy Mildew." Citrus trees affected with "Brown Rot" need special care. See that no foliage is within 18in. of the ground; use a good mulch; spray with Bordeaux. Loosen the soil as soon as possible after irrigation, especially about young trees.

See that you have plenty of cases at hand or on order, and that the fruit picking accessories are ready for use. Sulphuring boxes and drying trays should be put in good order.

Ploughs and harrows should be cleaned and oiled and painted, and put under shelter.

Vines should be cinctured as the caps of the blossoms fall. Deal gently with a weakly vine. Keep soil well worked.

RIVER MURRAY HERD TESTING ASSOCIATION.

RESULTS OF BUTTERFAT TESTS FOR SEPTEMBER, 1923.

Herd No.	Average No. of Cows in Herd.	Average No. of Cows in Milk.	Milk.			Butterfat.		
			Per Herd during Sept.	Per Cow during Sept.	Per Cow October to Sept.	Per Herd during Sept.	Per Cow during Sept.	Per Cow October to Sept.
			Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.
1 C	32.73	28.31	31605	965.63	9119.09	1253.12	38.29	363.87
1 E	20	14.53	10097	504.85	6731.53	411.89	20.59	295.27
1 F	14.23	11.57	11438	803.79	6134.55	460.31	32.35	289.74
1 G	17.90	17.74	14913.5	833.16	6962.31	634.57	35.15	315.85
1 M	20.52	15.34	10318.5	592.85	5835.33	483.87	23.58	291.15
1 R	16.10	14	10812	671.55	6071.05	486.53	30.22	298.97
1 T	12.73	10.97	7427	583.42	6481.27	381.92	30.00	327.10
1 U	13	11	9135	702.69	7965.67	389.27	29.94	343.15
1 W	19	16.77	11586	609.79	7466.34	448.76	23.62	280.93
1 X	18	12.15	12220	678.88	6578.25	491.30	27.29	287.23
1 Y	24	23.82	16896.5	704.02	7521.71	688.55	28.69	318.72
1 Z	21.81	17.60	15982.5	732.81	6374.08	634.87	29.11	281.55
1 AA*	7	3.22	2861.5	408.79	6998.72	120.82	17.26	312.28
1 BB*	7.33	7.33	3330	454.30	5946.68	164.84	22.49	265.63
1 CC†	19.67	15.88	11123.5	565.51	4749.09	432.17	21.97	291.64
1 V‡	14	13.07	4808	343.43	4302.21	238.64	17.05	194.84
Means	17.38	14.58	11534.69	663.82	7048.68	482.59	27.77	308.16

* Entered Association November 1st, 1922. † Entered Association December 1st, 1922.

‡ Entered Association February 1st, 1923.

MOUNT GAMBIER AND DISTRICT HERD TESTING ASSOCIATION.

RESULTS OF BUTTERFAT TESTS FOR SEPTEMBER, 1923.

Herd No.	Average No. of Cows in Herd.	Average No. of Cows in Milk.	Milk.			Butterfat.		
			Per Herd during Sept.	Per Cow during Sept.	Per Cow August to Sept.	Per Herd during Sept.	Per Cow during Sept.	Per Cow August to Sept.
			Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.
2/A	20.73	12.73	9349	450.99	814.59	337.01	16.26	29.63
2/B	7.4	6.77	6202.5	838.18	1644.13	201.09	27.17	53.75
2/C	18	15.20	9621	534.50	1036.81	347.74	19.32	37.09
2/E	15	9	7455	497.00	912.20	310.96	27.31	44.00
2/F		Withdrawn	from Association (31/8/1923)					
2/H	24.33	26.30	14560.5	598.83	1069.98	534.48	21.97	39.20
2/I	12	9.87	7904	658.67	1060.50	289.68	24.14	39.23
2/J	11.70	10.33	9863	842.99	1433.89	373.72	31.94	52.91
2/K	21	16.17	13109	624.24	1030.48	465.72	22.18	37.91
2/L	30	19.03	10394.5	346.48	572.55	430.96	14.37	24.02
2/O	35	26.43	17177	490.77	951.24	662.53	18.93	34.88
2/R	14.89	14.66	15990	1073.88	1961.38	641.08	43.05	77.32
2/S	5	5	3915	783.00	1442.00	174.92	34.98	65.21
2/T	11	9.10	8871	806.45	1477.18	334.26	30.39	57.88
2/U	16	11.83	12415	775.94	1288.63	436.18	27.26	46.24
2/V	16.92	14.93	7102	419.74	746.06	266.03	15.72	30.82
2/W	11.7	11.7	10372	903.59	1809.64	339.99	29.06	59.28
2/X	24	20.07	17363.5	723.48	1226.05	585.12	24.38	42.66
2/Y	11	10.3	9405	855.00	1450.91	367.71	33.43	58.10
2/Z	14.50	14.50	9810	676.55	1347.48	351.00	24.21	51.34
2/AA	22	20.13	14294.5	649.75	953.84	493.56	22.43	34.78
2/BB	9	9	4320	480.00	1028.94	154.58	17.18	35.98
2/CC	12	12	5775	481.25	888.50	224.39	18.70	34.94
Means	16.51	13.59	10248.98	620.86	1109.92	378.31	22.92	41.51

FRIESIAN BULL FOR SALE

The Department of Agriculture has for Sale the Friesian Bull

CHEESEMAN DE KOL 6th.

Born July 15th, 1917, and bred by the executors of the late David Mitchell, Lilydale, Victoria. This bull is by Bolobeck de Kol, from Rosey 20th. The bull is at present at Mount Gambier.

PRICE, 30 GUINEAS.

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THE DIRECTOR OF AGRICULTURE.

THE AGRICULTURAL OUTLOOK.

REPORTS FOR THE MONTH OF OCTOBER.

The following reports on the general Agricultural condition and outlook of the areas represented by the Government Experimental Farms mentioned below have been prepared by the respective Managers:—

Booborowie.—Weather.—The weather for October was very cold on the whole, and 230 points of rain were registered. Crops.—The crops are very promising, and some very heavy hay and grain yields should be obtained. Natural feed is very plentiful. Stock.—The livestock are all in good condition and healthy. Pests.—Various noxious weeds are becoming noticeable. Miscellaneous.—Farmers are busy cultivating their fallows.

Kybybolite.—Weather has been seasonable for the month. A nice rain fell from the 10th to 12th, followed by two weeks' fine dry conditions. Useful light rains have fallen at the close of the month. Two inches in all have been registered, which is slightly above the average. The total for year is now nearly 23ins., which is considerably above the average. Crops.—Autumn-sown crops are mostly poor, and hay crops will yield very light returns. Spring-sown barley and peas are making very good initial growth, and should November be comparatively cool some useful yields of these crops should be received. Fair areas of summer crops have been sown during the latter end of the month. Fields of subterranean clover have made a lot of growth during the month. Natural feed has made good growth, especially during the latter half of the month, and more particularly on those fields that have been top-dressed with phosphatic manure. Stock.—Shearing is in hand, but weather has delayed the work a fair amount. The wool clip is lighter than usual.

Turretfield.—Weather.—Nice rains have fallen during this month; 147 points were registered. It was much cooler than the average for October. Crops.—The crops have improved, and more hay will be cut than was expected, although some of the crops appear to consist of a large proportion of wild oats. The yield on the whole will be very light. Natural feed is plentiful, and holding out well in consequence of the cool weather. Stock are in good condition. A fair number of good-quality lambs are being sent away. Pests.—Rabbits are fairly numerous. Miscellaneous.—Vineyards are being worked up well, and good growth is being made.

<p align="center">APPOINT THE— EXECUTOR TRUSTEE AND AGENCY COMPANY OF SOUTH AUSTRALIA, LIMITED, Executor and Trustee of Your Will. Established, 1880. Estates and Trust Funds £5,737,834. Write for our Booklet.</p>	
<p align="center">DIRECTORS: W. HERBERT PHILLIPS, Chairman. JOHN BARKER. G. J. COWIE. A. G. RYMILL. JAMES H. GOSSE. SIR GEORGE BROOKMAN, K.B.E.</p>	
<p>Pastoral and Agricultural Inspector ..</p>	<p>CHARLES GRIBBE. Manager E. W. WILLIAMSON.</p>
<p align="center">TEMPORARY PREMISES— 11, GRESHAM STREET - - ADELAIDE.</p>	

DAIRY AND FARM PRODUCE MARKETS.

A. W. Sandford & Co., Limited, reported on November 1st, 1923.

BUTTER.—Production during the month showed a substantial increase, and of this a large percentage was sent to cold store for export. Interstate and London buyers have been buying large parcels, which has kept stocks cleared, whilst local purchasers have readily absorbed all available private separators and store and collectors' lines. A lowering in values to the extent of about 1½d. per lb. took place, due to the state of the London market. Choicest factory and creamery fresh butter in bulk, 1s. 4½d.; second-grade bulk, 1s. 2d. to 1s. 2½d.; best separators and dairies, 1s. 3d. to 1s. 3½d.; fair quality, 1s. 1½d. to 1s. 2½d.; store and collectors', 1s. to 1s. 1d.

EGGS.—At each auction held large quantities were marketed, but as a firm demand existed good clearances were effected. Pulp manufacturers and picklers were in evidence at every sale, anxiously purchasing their requirements. Fresh hen, 10d.; duck, 11d. per dozen.

CHEESE.—The seasonable increase brought about bigger quantities being consigned weekly from the South-Eastern factories, but as an exceptionally brisk local demand has been experienced, and fair sales interstate, good clearances have been made, market closing at the end of the month at 11d. to 12½d. per lb. for large to loaf.

HONEY.—Since our last report the demand has improved considerably for all grades, interstate orders being received for large parcels of prime clear extracted in liquid condition at 3½d. to 4d.; best candied lots, 3d. to 3½d.; lower grades, from 2d. to 2½d., according to quality; beeswax readily saleable for clear samples at 1s. 4d. per lb.

ALMONDS.—Steady demand ruled for all classes, big quantities being accepted by local and interstate operators for Brandis at 9½d. to 10d.; mixed softshells, 8½d. to 9d.; hardshells, 4½d. to 5d.; kernels in strong request at 1s. 5½d.; walnuts, 1s.

BACON.—An active trade has been maintained at firm prices, sales of hams increasing as buyers are now purchasing, having in view their stocks for Christmas. Best factory-cured sides, 1s. 3½d.; hams, 1s. 7½d.; Hutton's "Pineapple" brand hams, 1s. 9d.; middles, 1s. 5d.; rolls, 1s. 1½d. to 1s. 2d.; Hutton's "Pineapple" brand lard, in packets, 1s. 1d.; in bulk, 1s.

LIVE POULTRY.—At each sale we submitted fairly large catalogues, which, unfortunately, were short of our buyers' requirements. Therefore, all consignments received were disposed of at most satisfactory prices, and no doubt had the weather been more favorable for forwarding, consignors would have taken advantage of the excellent values which have been secured, and sent along their surplus birds. We anticipate that these good values will continue to rule for some markets to come, as poulterers, restaurant keepers, &c., have only light stocks on hand. Crates obtainable on application. The following prices ruled at to-day's auction:—Prime roosters, 5s. to 7s. 3d. each; nice condition cockerels, 3s. 9d. to 4s. 9d.; poor condition cockerels, 2s. 7d. to 3s. 3d.; plump hens, 4s. 6d. to 6s. 3d.; medium hens, 2s. 11d. to 4s. 3d.; some pens of weedy sorts lower; geese, 6s. 6d. to 7s. 9d.; ducks, good condition, 5s. to 8s. 3d.; ducks, fair condition, 3s. 4d. to 4s. 9d.; turkeys, good to prime condition, 1s. 1d. to 1s. 7d. per lb. live weight; turkeys, fair condition, 10½d. to 1s. 0½d. per lb. live weight; turkeys, fattening sorts lower; pigeons, 10½d. each.

POTATOES.—Only small quantities have been arriving from Victoria, and prices have advanced considerably, and potatoes are now realising 22s. per cwt. on rail, Mile End.

ONIONS.—Best quality dry Victorian onions are realising up to 10s. per cwt. on trucks, Mile End.

RAINFALL TABLE.

The following figures, from data supplied by the Commonwealth Meteorological Department, show the rainfall of the subjoined stations for the month of and to the end of September, 1923, also the average precipitation to the end of October, and the average annual rainfall.

station.	For Oct., 1923.	To end Oct., 1923.	Av'ge. to end Oct.	Av'ge. Annual Rainfall	Station.	For Oct., 1923.	To end Oct., 1923.	Av'ge. to end Oct.	Av'ge. Annual Rainfall
FAR NORTH AND UPPER NORTH.					LOWER NORTH—continued.				
adatta	0-13	2-05	4-24	4-93	Spalding	1-83	14-92	17-78	20-41
ee	0-20	3-70	4-89	6-14	Gulnare	1-95	17-81	17-11	19-34
ia	0-19	3-35	5-56	6-73	Yaaka	1-77	14-65	13-75	15-45
y	0-21	5-59	7-02	8-50	Koolunga	2-03	14-52	14-13	15-87
na	0-16	6-09	7-18	9-65	Snowtown	1-82	14-28	14-40	16-05
nan	0-40	8-33	10-73	12-61	Brinkworth	1-97	15-74	14-41	16-26
oda	0-37	2-86	6-63	7-91	Blyth	2-04	16-95	15-02	16-96
ina	0-07	7-86	11-21	13-60	Clare	2-08	28-22	22-20	24-60
ker	0-36	10-86	11-04	12-93	Mintaro	3-21	30-08	21-20	23-40
na	0-55	9-75	10-83	12-56	Watervale	3-51	29-27	24-97	27-44
on	0-32	6-78	10-84	11-60	Auburn	3-60	25-61	21-89	24-30
n	1-00	12-00	12-52	14-24	Hoyleton	2-16	16-52	15-89	17-85
Augusta	0-95	6-92	8-41	9-68	Palaklava	1-85	14-92	14-33	15-91
Augusta West	0-93	6-47	8-50	9-74	Port Wakefield	1-30	12-23	11-92	13-29
e	0-57	6-98	9-14	10-76	Terowie	1-15	10-69	11-77	13-78
mond	0-60	10-61	11-30	11-90	Yarcowie	0-80	9-89	12-37	14-18
nington	1-11	16-34	16-29	18-44	Hallett	1-80	16-00	14-38	16-47
rie	1-03	12-14	10-93	12-41	Mount Bryan	2-12	19-79	14-70	16-74
se	3-86	25-91	20-10	23-88	Koorunga	1-98	15-90	16-19	18-06
argo Centre	1-46	16-60	13-77	15-67	Farrell's Flat	2-30	20-29	17-03	18-97
Gerarda	2-28	12-37	11-20	12-93	WEST OF MURRAY RANGE.				
abara	2-11	13-31	17-59	19-85	Manoora	2-56	22-57	15-76	18-78
ila	1-69	14-78	13-06	15-01	Saddleworth	2-51	21-54	17-59	19-74
ock	0-28	8-57	9-91	11-50	Marrabel	2-54	26-22	17-61	19-07
pton	0-68	11-18	11-06	12-91	Riverton	2-45	26-63	18-59	20-71
blure	0-55	8-27	9-16	10-85	Thorpe	2-19	25-61	15-85	17-81
lia	1-22	11-68	11-68	13-56	Stockport	2-27	21-01	14-65	16-49
ner	0-76	10-57	11-90	13-75	Hamley Bridge	2-17	23-19	14-66	16-62
kara	0-26	6-18	10-32	11-85	Kapunda	2-73	21-90	17-76	19-80
k Rock	1-51	13-48	10-92	12-73	Freeling	2-27	23-92	15-91	17-90
lta	0-57	6-75	10-17	12-10	Greenock	2-85	29-58	17-31	21-00
riorough	1-20	13-67	11-55	13-53	Truro	3-01	26-59	18-01	20-80
ala	0-72	12-92	12-51	14-51	Stockwell	2-61	26-89	18-01	20-31
LOWER NORTH-EAST.					Nuriootpa	1-79	24-70	18-69	20-99
ta	—	3-81	7-38	8-93	Angaston	1-98	27-94	20-05	22-48
akaringa	0-11	4-80	7-10	8-61	Tanunda	1-83	28-65	19-94	22-20
nahili	0-03	4-28	7-27	8-79	Lyndoch	2-73	37-09	20-62	22-88
klum	0-02	4-10	6-98	8-42	Williamstown	2-99	37-56	21-90	27-47
ken Hill, N.S.W.	0-27	6-81	8-46	10-08	ADELAIDE PLAINS.				
LOWER NORTH.					Mullala	2-26	22-41	11-51	16-66
t Pine	3-40	12-60	11-97	13-55	Roseworthy	2-07	24-17	15-43	17-29
t Broughton	2-15	14-38	11-85	14-27	Gawler	2-71	24-91	17-12	19-09
e	2-33	17-09	14-23	15-80	Two Wells	1-53	20-27	11-17	15-83
ra	2-73	19-52	16-23	18-25	Virginia	1-76	23-14	15-30	17-31
owie	1-87	17-56	15-09	17-19	Smithfield	2-00	25-89	15-20	17-16
estown	2-35	19-63	15-67	17-86	Salisbury	2-68	28-78	14-29	18-45
aleer W. Wks.	1-74	18-35	15-86	18-05	North Adelaide	2-45	30-30	19-98	22-22
stone	2-36	21-06	14-33	16-22	Adelaide	2-22	26-60	18-93	20-05
stal Brook	2-19	15-77	14-12	15-93	Glenelg	2-14	23-29	16-57	18-37
retown	2-28	20-39	16-49	18-50	Brighton	2-15	25-14	19-61	21-34
rniv	1-67	14-60	15-61	16-43	Mitcham	2-56	31-90	22-52	24-06
hill	1-79	15-51	16-31	16-93	Glen Osmond	2-80	35-52	23-42	25-78
					Mazill	3-37	37-92	22-68	25-24

RAINFALL—continued.

Station.	For Oct. 1923.	To end Oct. 1923.	Avg. to end Oct.	Annual Rainfall	Station.	For Oct. 1923.	To end Oct. 1923.	Avg. to end Oct.	Annual Rainfall
MOUNT LOFTY RANGES.					WEST OF SPENCER'S GULF—continued.				
Teatree Gully.....	2-93	39-36	24-73	27-65	Talia.....	1-10	15-61	13-81	14-74
Stirling West.....	5-00	60-23	42-13	46-59	Port Elliot.....	1-69	18-71	15-36	15-14
Uraidla.....	4-17	58-11	40-29	43-92	Cummina.....	1-57	20-09	17-69	18-14
Clarendon.....	3-37	39-56	30-05	32-98	Port Lincoln.....	1-51	18-68	15-13	15-14
Morphett Vale.....	2-27	26-58	20-53	22-79	Timby.....	1-48	12-23	12-88	13-14
Noarlunga.....	2-14	25-70	19-55	20-35	Carrow.....	1-59	11-65	12-43	13-14
Willunga.....	3-15	30-54	23-72	25-89	Arno Day.....	1-02	11-03	11-65	12-14
Aldinga.....	2-40	23-05	18-66	20-35	Cowell.....	1-57	7-11	10-53	11-14
Myponga.....	3-26	32-22	26-83	29-16					
Normanville.....	1-90	25-61	20-87	20-61					
Yankalilla.....	2-25	29-15	21-24	23-10					
Mount Pleasant.....	3-45	38-80	24-83	27-16					
Birdwood.....	3-08	40-12	26-65	29-33					
Gumeracha.....	3-65	48-05	27-55	33-29					
Millbrook Reservoir.....	4-13	49-04	—	—					
Tweed vale.....	4-14	50-04	32-59	35-55					
Woodside.....	3-56	41-70	29-32	32-11					
Ambleside.....	4-41	46-44	31-66	34-67					
Nairne.....	2-54	32-45	25-83	28-42					
Mount Barker.....	4-15	42-59	28-48	31-18					
Echunga.....	3-58	43-68	30-14	32-96					
Macclesfield.....	4-23	37-13	27-71	30-67					
Meadows.....	5-05	44-69	32-74	36-04					
Strathalbyn.....	2-31	18-93	17-43	19-32					
MURRAY FLATS AND VALLEY.					SOUTH AND SOUTH-EAST.				
Meningie.....	2-14	21-18	16-83	18-66	Cape Borda.....	1-92	21-67	23-23	24-14
Milang.....	1-29	13-81	15-62	15-40	Kingscote.....	1-83	21-66	17-98	18-14
Langhorne's Creek.....	1-86	15-98	12-09	14-61	Penneshaw.....	1-37	16-95	17-26	17-14
Wellington.....	1-15	14-02	13-02	14-77	Victor Harbor.....	1-63	20-37	19-36	20-14
Tailm Bend.....	1-47	15-65	12-81	14-53	Port Elliot.....	1-33	16-94	16-17	16-14
Murray Bridge.....	1-47	12-78	12-26	13-93	Goolwa.....	1-21	15-51	16-07	16-14
Callington.....	1-40	16-15	13-80	15-42	Pinnaroo.....	1-12	16-26	13-23	13-14
Mannum.....	0-70	9-96	10-36	11-64	Parilla.....	1-01	15-63	12-61	12-14
Palmer.....	1-59	16-50	13-74	15-47	Lameroo.....	1-60	17-37	11-23	11-14
Sedan.....	1-12	13-51	11-02	12-29	Parrakie.....	1-55	15-97	12-55	12-14
Swan Reach.....	0-71	9-73	9-59	11-09	Geranium.....	1-76	17-73	14-50	14-14
Blanchetown.....	0-27	5-05	8-76	10-16	Peake.....	1-67	16-55	15-73	16-14
Eudunda.....	1-70	16-65	14-46	17-54	Cooke's Plains.....	1-99	19-63	13-15	13-14
Sutherland.....	1-13	11-31	9-65	11-19	Coomandook.....	1-78	16-23	15-58	16-14
Morgan.....	0-56	6-77	7-86	9-30	Coomalpyne.....	1-46	19-09	15-47	15-14
Waikerie.....	0-58	6-89	8-35	9-91	Tintinara.....	1-56	20-96	16-15	16-14
Overland Corner.....	0-41	6-01	9-36	11-07	Keith.....	1-64	19-94	15-91	15-14
Loxton.....	0-44	9-60	10-99	12-63	Bordertown.....	2-38	20-32	17-05	17-14
Renmark.....	0-72	7-58	10-34	11-09	Wolseley.....	2-65	22-08	16-19	16-14
Monash.....	—	—	—	—	Frances.....	2-67	22-67	17-29	17-14
WEST OF SPENCER'S GULF.					Naracorte.....	2-21	23-60	19-55	19-14
Eucra.....	0-20	4-99	9-23	10-02	Penola.....	3-26	26-95	23-23	23-14
White Well.....	0-53	5-04	7-88	9-08	Lucindale.....	2-49	24-39	20-63	20-14
Fowler's Bay.....	0-54	11-86	11-21	12-16	Kingston.....	2-14	23-32	22-71	22-14
Penong.....	0-88	12-64	11-15	12-16	Robe.....	1-70	22-45	22-57	22-14
Ceduna.....	0-57	9-56	9-11	10-36	Beachport.....	1-45	21-83	21-88	21-14
Smoky Bay.....	0-58	12-88	9-75	—	Millieent.....	3-26	32-01	27-17	27-14
Petina.....	0-78	13-61	11-15	13-34	Kalangadoo.....	4-18	34-99	—	—
Streaky Bay.....	1-02	14-55	13-98	15-10	Mount Gambier.....	2-68	27-30	27-68	27-14

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Mundalla	•	21	19	Tarcowie	†	20	—
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Paruna	†	—	—	Windsor	382	—	—
Paskeville	†	23	21	Winkie	•	19	17
Pata	†	—	—	Wirrabara.....	†	17	22
Penola	408	8	1	Wirrega	•	—	—
Petina	†	24	22	Wirrilla.....	•	17	22
Pinnaroo	•	1	—	Wirrulla	388	17	—
Pompoota	•	14	12	Wolowa	•	—	—
Port Broughton	•	23	21	Wookata	†	17	22
Port Elliot	†	21	19	Wudinna	349	17	—
Port Germein	•	24	—	Wynarka	393	—	—
Pygery	†	21	22	Yabmana	•	—	—
Ramco	389	19	—	Yacka	•	20	18
Rapid Bay	†	3	1	Yadnarie	†	20	18
Redhill	382	—	—	Yallunda Flat.....	•	—	—
Rendelsbam	†	21	19	Yaninee	•	—	—
Renmark	†	22	20	Yeelanna	•	17	22
Riverton	•	—	—	Yongala Vale	•	—	—
Riverton (Women's)..	•	—	—	Yorketown	•	—	—
Roberts and Verran ..	•	22	20	Youngbusband.....	392	22	22

* No report received during the month of October. † Held over until next month. ‡ Formal.
A.M. Annual meeting.

THE AGRICULTURAL BUREAU OF SOUTH AUSTRALIA.

Every producer should be a member of the Agricultural Bureau. A postcard to the Department of Agriculture will bring information as to the name and address of the secretary of the nearest Branch.

If the nearest Branch is too far from the reader's home, the opportunity occurs to form a new one. Write to the department for fuller particulars concerning the work of this institution.

REPORTS OF BUREAU MEETINGS.

UPPER-NORTH DISTRICT.

(PETERBOROUGH AND NORTHWARD.)

HOOKINA (Average annual rainfall, 12in.).

August 30th.—Present: 11 members and seven visitors.

HORSE BREEDING.—Mr. J. O'Connor, who read a paper under the title "Does it Pay to Breed Horses in this District for Use on the Farm," considered that every farmer in that district should breed horses for work on the farm. The farmer with a couple of suitable mares should secure the services of a good draught stallion for the mares, and if the horses that were bred were not required on the farm they could be sold for a good figure at three years of age. The mare in foal should be able to work without any difficulty up to within a week or so of foaling. By breeding two foals every year the farmer would be able to keep a good substantial team of young horses, for it would enable him to dispose of the aged and unsuitable workers. Whilst the horses that were secured from station properties could usually be obtained for a cheap figure, the speaker did not favor them for farm work because they were not easily broken in and did not settle down for a very long time to the work on the farm. In the discussion that followed, Mr. R. Wardleworth agreed with the paper regarding the reliability of the foal reared on the farm, but he considered it was cheaper to buy a horse than to rear one. He held the opinion that a foal would cost about £20 for paddocking before it was ready to be broken in. Other speakers agreed with the writer of the paper.

HOOKINA (Average annual rainfall, 12in.).

September 20th.—Present: 12 members and five visitors.

WOOL CLASSING.—Mr. S. Stone read a short paper, "Wool Classing," and in the discussion that followed Mr. B. A. Murphy expressed the opinion that the best plan to adopt was for the farmer to class the sheep and cull out all the short and coarse woolled animals before they were yarded in the shearing shed. Mr. P. B. Henschke did not think it advisable for the farmer with a small flock to divide the clip into too many classes. Mr. H. V. Henschke supported the remarks of Mr. Murphy.

MORCHARD (Average annual rainfall, 13.50in.).

September 22nd.—Present: 17 members.

LUBRICATION.—Mr. H. G. Kupke, who read a paper dealing with this subject, said the proper lubrication of all farm implements, machinery, and vehicles, was a point very much neglected by the average farmer. In the first place it was necessary to secure the most suitable class of oil or grease for the type of machine that was being used. Cheap oils should never be used because, as a rule, they contained but very little lubricating properties. He was of the opinion that the cost of replacing worn out parts could be cut in half if farmers used oil of the very best quality. In addition to obtaining a good class of lubricant, it was essential that care should be taken to see that the oil or grease reached every working part of the machine. An interesting paper dealing with the subject, "The Storing System *versus* the Pooling of Wheat," was contributed by Mr. E. J. Kitchin.

WEPOWIE (Average annual rainfall, 13.54in.).

September 25th.—Present: eight members.

SUPERPHOSPHATE.—In the course of a paper dealing with this subject, Mr. J. T. Burns said remarkably good effects could often be produced with heavy dressings of super compared with the light dressings, which many farmers until recently had been in the habit of using. South Australian farmers as a community used heavier dressings of super per acre than was the case with Victoria or New South Wales, but as South Australian farmers began to win their way in the other States they took with them the methods learned in South Australia and applied the more substantial dressing, which had been the custom in this State. All lands did not require the same treatment, but it was not the habit of the average farmer to proceed on those lines. The scientific users of artificial manures were rarely to be met with outside the Government Agricultural Colleges and Experimental Farms. The Director of Agriculture had stated that with some necessary improvements in farming practice South Australia was capable of a maximum wheat average of 20bush. per acre as against 11bush. average. These improvements were an all-round increase in the quantity of super used per acre; secondly, more thorough tillage; thirdly, improvement in type of seed wheat usually sown. In the discussion that followed, Mr. T. F. Orrock said that it would be found profitable to sow super on pasture land about once in two years. Mr. W. F. J. Smith advocated heavier dressings of super than were usually applied.

WABCOWIE, September 19th.—Mr. W. Crossman read a paper, "The Divining Rod," and a keen and interesting discussion followed.

WEPOWIE, August 28th.—Messrs. T. F. Orrock and J. F. Burns gave an interesting and detailed account of the tractor trial recently held at Whyte-Yarcowie. It was decided that future meetings of the Branch should be held on the Tuesday evening on or before full moon.

WILLOWIE, August 23rd.—The report of the delegates who attended the Tractor Trial at Whyte-Yarcowie was received, and an interesting discussion followed.

MIDDLE-NORTH DISTRICT.**(PETERBOROUGH TO FARRELL'S FLAT.)****CRYSTAL BROOK (Average annual rainfall, 15.62in.).**

September 21st.—Present: 13 members and visitors.

TOMATO CULTURE.—Mr. A. J. Sarre read a paper from which the following is extracted:—The tomato is a native of the warmer parts of America, and was introduced into Europe in the sixteenth century. It belongs to the family of solanums, of which the potato and tobacco are also members, so it is reasonable to believe that diseases and pests that attack one of these will also attack the others. Blight annually takes a heavy toll of tomato growers. A wet summer, which is beneficial to most growing vegetables, considerably shortens the life of the tomato, because it is conducive to soft growth, which is attacked by the blight. Herein lies a warning not to over water. Too much water builds up a soft plant. Any fairly good garden soil will grow tomatoes, and a liberal application of wood ashes at planting time, with a sprinkling of bonedust and superphosphate after the plants are established, will be beneficial. One planting where a previous crop has been heavily manured with stable manure is suitable, providing the other crop has been a vegetable of a different nature. Being a tropical plant it requires warmth to grow to perfection, hence, in temperate climate, unless one goes to a deal of trouble it is not a wise policy to plant out in the open ground until the warm weather approaches. Of course, there are some exceptional places in our own State where they can be grown practically all the year round, owing to a mild winter and absence of frosts. To start plants fairly early one requires a hot bed. To make this make a shallow frame without a top or bottom, and place in it 3in. or 4in. of soil. Sow the seed thinly and press them down firmly with a board, covering the seed lightly, and add a mulch

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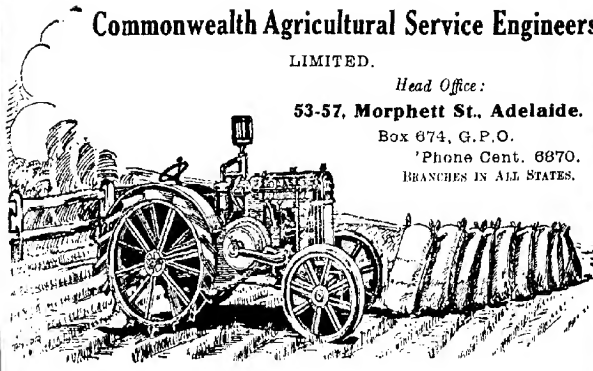
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of sifted manure or sawdust. Keep this moist for a few days and in the morning cover with hessian or glass. If using hessian, the seedlings will grow slowly but will be hardy, whereas if one forgets to remove the glass on bright days the plants will be drawn and spindly. To harden the plants further they should be picked out into shallow boxes containing about 3 in. of soil, allowing about 2 in. between each. If buying plants see that they are dark in the stem, the color that denotes that they have been hardened off. The top may be a bit yellow and ragged, but that is no fault, as they will start to grow almost immediately. Unless one is prepared to go to a lot of trouble it is quite early enough to plant the tomatoes out in August and September. In many years' experience I find that on the whole the later planted ones yield fairly early fruit with less trouble than do those planted out in June and July. If possible, rough dig the ground some considerable time ahead and dust it with lime; then when ready to plant out dig it again and pulverise it as finely as possible, at the same time dressing in artificial manure, such as bone dust, bone super, &c. Do not use much stable manure at this time. Water sparingly whilst growing, too much water tends to produce leaf. If possible plant upon new ground each season. By so doing you stand a better chance of escaping the ravages of bacterial blight and other forms of disease, which plays havoc with the plants. New districts are free for a season or two, but then the disease breaks out, the spores probably having been carried there by second-hand cases. Spraying whilst the plants are young with Bordeaux or Burgundy mixtures sometimes helps to check the disease. To produce early tomatoes it is necessary to plant varieties that produce the fruit from the first cluster of flowers. The best early variety that has come to my notice is the Early Dwarf Red. It is a sure cropper, and, if well cultivated, will produce a quantity of large fruit with a fairly smooth skin. It will also produce fruit under almost any conditions. I have had beautiful fruits from this variety weighing as much as 16oz. and 18oz. each. There are other excellent early varieties, such as Chalk's Early Jewel and Earliana, which produce heavy fruits of a milder flavor than the dwarf, but they grow taller and are not so sure croppers. Measure out the positions for planting by driving stakes into the ground previous to planting, the dwarfs at 2ft. apart and 3ft. between the rows, and the taller ones 3ft. apart and 4ft. between the rows. By putting in the stakes first you do not damage the roots as is often the case when digging, when the plants are large. Where stakes are used one is able to get amongst the plants at all times to cultivate, examine, and, if necessary, spray them. The air can circulate amongst them and so keep them healthier. Good ventilation during growth keeps down disease. One hears many complaints of the shortness of the life of the tomato plant nowadays. Granting that diseases do play havoc more than it did in the early days, yet it is reasonable to expect such a heavy cropper as the early dwarf, for instance, to wear itself out in a few months. Pruning in some form or other is followed by most commercial growers. The one stem style is to train the plant up the stake, pinching out all side growths rising in the axils of the leaves. If after the plants have, say, the clusters of buds, the top of the plant is also nipped out the fruit will probably set. A new shoot will then grow out at the top and carry on. The growth being rapid, one has to attend to the ties fairly often. Binder twine is useful for tying to the stake. If you are growing the tall varieties on the above plan they may be planted closer than the 3ft. before mentioned. Another method of pruning is to retain about four stems instead of the one, but follow the same plan of nipping out the side shoots when the heat of the summer comes. It is sometimes advisable to give the pruning a rest, just taking out enough foliage to allow the air free circulation amongst the plants, otherwise the sun will scorch the fruit. Still another form of training is on a trellis or large mesh wire netting, allowing about six stems to the plant, the side shoots still being nipped out. Later varieties could be planted at the same time as the early ones, to come into bearing when the earlies are going off, or the early ones could be sown later to keep up a continuity. Do not make the mistake of planting tomatoes in the same place as they grew last year "just because they did so well there last time," nor yet plant them where potatoes grew or you will be inviting trouble. The diseases of one will attack the other, and even the insects damaging one will pass on to the other. Other grubs or caterpillars that are troublesome are the cut worms, which eat into the tomato plant at ground level, the plant then topples over. This grub works at night and hides just below the surface of the

ground in the daytime. It is of a dull slaty appearance and can be destroyed with 1oz. of Paris green and 1lb. of bran and pollard mixed; moisten with sweetened water, work into pellets, and place around the plants. Keep children away from the plants at this time. Another caterpillar that attacks the fruit, working around inside of the early ones and then passing on to another one, can be destroyed by spraying the fruit when young with Paris green, but the most reliable remedy is to examine the plants frequently and kill all of the grubs that you can find. Sometimes by jarring the plant you can dislodge this pest. With a view to preventing too great a change in the temperature of the soil, watering should be done in the early hours of the morning when the soil is coldest. The amount of water required is a much debated phase of tomato culture. I have seen healthy plants bearing good crops of splendid fruit in fallow ground without artificial watering. On the other hand, I have also seen plants started with a little watering, and then being neglected give most disappointing results, the fruit being small and tough. Then, again, plants that have received a good and continuous soaking have yielded the largest fruit of the whole plot. Water should be applied by trench after the fruit has set, if sprayed on to the fruit it causes cracks. Most of the diseases to which the tomato is liable are of the plant, but a disease of malformation that spoils a lot of fruit is what is known as "Jack" tomato. It forms hard cores in the fruit, and perhaps one portion ripens nicely and the other part is hard. Many plants form and ripen perfect fruit at first, but the later ones will develop as described, and the plant also develops malformation. In the discussion that followed, Mr. H. J. Firth said that those who were engaged in wheatgrowing had proved that the rotation of cropping was a good thing, and he asked if Mr. Sarre would recommend adoption of similar methods in tomato cultivation, and whether the cause of tomatoes only ripening on one side was attributed to disease or scalding of the sun. Mr. Sarre, replying, said that tomatoes should not be planted in ground which in the previous year had been planted with potatoes. Good results should result from rotating with peas, as peas supplied nitrogen, which was an excellent plant food. It was not advisable to use fresh stable manure for tomato cultivation. The cause of partial ripening was scalding by the sun. Mr. G. E. Gum asked whether planting on a former onion plot would prejudicially affect the onion crop the second year, and whether young plants with long roots should be planted to full depth or whether the roots should be spread out. Mr. Sarre, in reply, said one could plant onions on the same plot for a generation without any fear. Tomatoes being a shallow rooted plant, the roots should be spread.

SARRELL'S FLAT.

August 24th.—Present: 18 members.

CARE OF MACHINERY.—The following paper was read by Mr. E. G. Pratt: "As a rule, in our district, we experience very wet winters, and the time when the land can be worked to the best advantage is limited. In the summer we have a large percentage of damp days, which considerably delay harvesting. Therefore, for the efficient working of a farm it is absolutely necessary that the farmer should keep his implements in as good condition as possible, so that when weather conditions are satisfactory he can make the best use of the time at his disposal. Nothing is more annoying to the modern farmer than to be hung up for several hours or days with a broken implement. Old, worn out, and out-of-date small machinery should, if the farmer can possibly afford it, be replaced by new and modern machinery. In many cases old and worn out machinery does not do the work properly and costs more in time wasted and repairs than would pay for a new machine. One large modern implement will often do the work of two small out-of-date ones, thereby effecting a saving of labor. In purchasing a new implement the farmer should remember that in all probability he will be working it for the next 10 or 12 years. If the farmer considers buying an implement, which he cannot inspect under working conditions, it is a good plan to ask the firm for a trial, and secondly, to see that fittings can be obtained with the least possible delay. Most firms send out books with code words for parts, and these should be kept and the code used when wiring for new fittings. In selecting a plough or cultivator it should be observed that the shares should be of a type that is always obtainable and easily and quickly put on and taken off. A good point in many cases is to select a new implement of the same make as the old one, because quite a number of the fittings from the old machine will come in

useful for repairing broken and worn out parts. Ploughs, cultivators, and harrows should be of the stump-jump pattern, unless all the land likely to be worked is absolutely free from stones. Lubrication is an item sadly neglected by too many farmers, and effective lubrication is, I consider, half the life of a machine. It is not sufficient to buy a tin of oil, and oil the harvester or binder at regular intervals. For harvest time a lubricant should be selected with a good, heavy constituency that will retain its body on the hottest day and also when exposed to heated bearings. Many heavy-bodied oils only retain their body while in the shade, and so soon as they are exposed to the heat of the sun or used on a heated bearing they become like water and run out. The result is that the driver has to oil very frequently or else there is considerable wear and even danger of fire. Certainly no oil will retain its original thickness after it has been exposed for three or four hours to the sun, but if it has a good, retentive body it will remain stringy and adhere around the bearings instead of running off. Of course, the best oil is useless without the operator sees that it reaches the bearings. All small oil holes should be cleaned out with a piece of thin pointed wire at least once a day, so that it can be seen if the oil is going into the larger bearings. For plough and cultivator wheels I find that when oil only is used much of it goes straight through and drips out on the other side. To prevent this I tried mixing a small quantity of melted fat with the oil and obtained better results. I consider that the used oil from cars, mixed with fat, would do very well for this purpose, and would remind one to clean the oil out of the car more frequently. For wagon, dray, and buggy wheels, &c., it pays to buy the best axle grease. All tillage implements, such as ploughs, cultivators, &c., should be lifted at the corners when turning, because turning with the implement in the ground strains it, particularly with big implements. This practice also has a bad effect on the horses. A good tool box should be fixed to every implement, and in it carried the necessary wrenches, a hammer, a few bolts of various sizes likely to be needed, several split links, and a piece of wire. The wire should not be used if the implement can be fixed with bolts, and, if used, should be taken out at the first opportunity and the part properly fixed. When finished with, ploughs and cultivators should be taken from the paddock and placed where stock cannot rub against them, and the weight of the implement should be rested on the ground, not on the wheels. It is not necessary to place implements of this kind in a shed, but a coat of paint every few years will be beneficial. In spare time it is a good plan to overhaul and put them in good order. Harrows should be placed where they will not be dangerous to stock. The harrow heads should be put in a shed and given a coat of tar. All other machinery should be placed in a shed as soon as possible, and all belts removed, oiled, and rolled up, care being taken not to make the roll too small at the start and so crack the leather. Binder canvasses should be removed, rolled, and hung up where mice cannot reach them. On wet days the machinery can be thoroughly overhauled, new parts obtained where required, and everything put in order. Poultry should not be allowed in the implement shed, because they litter the machines and do a certain amount of damage. The ideal shed for implements is a stone building with an iron roof and sliding doors, but a straw roof is very satisfactory if kept well covered. A blacksmith's shop, with the necessary tools, will be found very useful and economical in keeping the machinery in good repair. It should be erected in a place well away from stables, stacks, &c., and in a position where machinery can be pulled up close to it, care being taken to make it large enough to admit any implement. Every tool should have a special place and be kept there and not be left lying in the place where it was last used. Gates should be made sufficiently wide to take implements through without danger of hitting the posts. A good plan is to have a wide wire gate near the other gates through which to take the machinery. The windmill requires very little attention, but one should not forget to grease it occasionally and to see that everything is in order. The engine should be placed in a closed-in shed and kept clean. It should never be overloaded or allowed to run too quickly. The inlet valve should be held in whilst the engine is running down after being stopped, because bumping against the compressor whilst slowing down is detrimental to the bearings. The chaffcutter also requires covering, but should be in a position where a load of hay can be pulled up into a convenient position for cutting. The saw should be kept covered and have a coat of grease smeared over it when not in use. It should be kept thoroughly sharp and properly set, because a blunt and unset saw is dangerous. Most imple-

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thanks to the spice, they have been going strong ever since. I have been telling my friends about 'KARSWOOD' Poultry Spice and its results; but one or two doubted my word, so I brought them down and showed them my Rhode Island Red Pullets and the eggs I was getting, and I can tell you they altered their tune; they have some the same age as mine and they are not laying yet, so they now intend to give 'KARSWOOD' a trial. I thank you for your letter, and I will be very pleased to receive the book when it arrives. You may make use of this letter with pleasure.

(Signed) H. J. BRADLEY."

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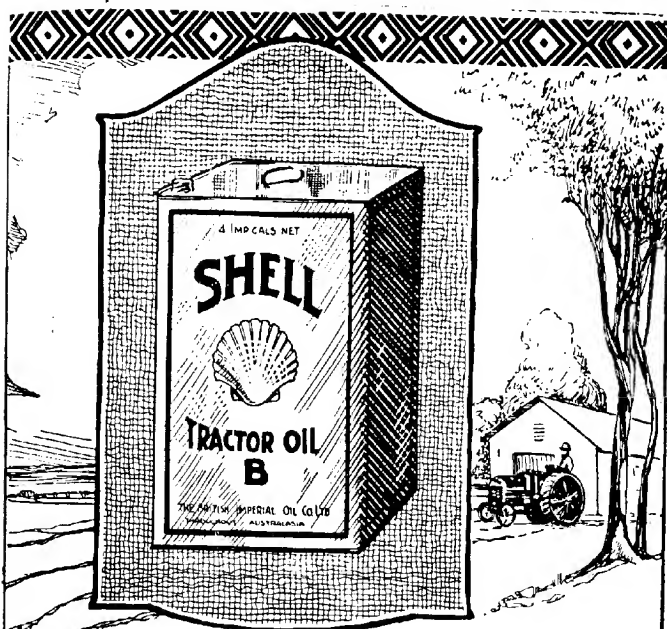
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ments are sent out with a book of instructions and these should be followed as closely as possible. No implement should ever be worked in a damaged condition, because there is danger of it doing more damage than good. Last, but not least, a coat of paint applied to any machine is always a good investment.'

LAURA.

MAINTAINING SOIL FERTILITY.—At a recent meeting of the above Branch, the following paper was read by Mr. F. T. Hughes:—'Chemical fertilisers are widely used, but little understood. A certain amount of super is applied to land and if a substantial increase of crop is obtained, most farmers are satisfied. They, however, do not stop to think whether they are reducing the value of their land or increasing its power to produce good crops. Before super-phosphates were introduced we expected to grow two crops in succession, but now it is very rarely that a cropped stubble paddock will yield a profitable crop. There must be some reason for this. Either we are not using the right fertiliser or we are destroying the texture of the land by our method of fallow, crop, burn, and fallow again. Fertilisers containing nitrogen are beneficial to crops, but are too expensive for cereals, so some other source must be sought to supply this plant food. When agents first came around on their mission of selling seed and fertiliser drills one of their chief stock arguments was that 40lbs. of seed per acre, sown through the drill, was as good as 60lbs. sown broadcast. It was stated that the saving in seed would soon pay the cost of the drill. It was also affirmed that 40lbs. of super would give an increased yield of from 8bush. to 10bush. per acre. These statements were confirmed by experience. When our neighbor got his drill he used the quantities referred to above, and his crop produced between 26bush. and 27bush. to the acre. We broadcast a bushel of wheat to the acre and only reaped 17bush. to the acre. At present we use 75lbs. of seed and from 70lbs. to 80lbs. of super, but very rarely reap more than 25bush. to the acre; often only 20bush., and sometimes less, notwithstanding the fact that better cultivation methods are adopted. The reason for this reduction in yields, in my opinion, is our method of fallow, crop, burn, and fallow again. This causes the removal of organic matter from the soil, which means poorer crops and greater difficulty in working the land. Land, under this method, becomes excessively poor and quickly hardens. There is also an absence of worms, even when the soil is in an ideal condition for working. This reveals an absence of organic matter necessary for an ideal condition of the land and various forms of soil life, which in turn prepare the plant food so necessary for good crops. The time is fast approaching when Australian farmers will have to find some means of returning to the soil the organic matter that is being fast removed under present methods. One way to do this is by the application of stable manure, which should be carted from the stable and spread from the dray; not tipped in heaps, because by this latter method much of its value is wasted. The natural place for the manure is on the surface where the rain can wash its goodness into the soil, and the sun break down its texture, thus providing food for the myriads of soil organisms which manufacture plant food. As this method of manuring entails a great deal of labor, and the supply is limited, other methods must be discovered to achieve the same results. A good burn is very useful for cleaning up the land, and at the same time destroying take-all, and I believe it would be a good policy to burn the stubble and sow oats or Subterranean clover, or a paddock of each. The Superintendent of Experimental Work of the Agricultural Department (Mr. W. J. Spafford) says that Subterranean clover is a collection of nitrogen, and greatly improves land for other crops. It should be sown in autumn so that it may start with the first rain. If half the stubble land was scratched over and sown with this very useful plant each season, and this continued until the whole farm has been covered, no further sowing should be necessary, because it is said to stand cultivation and come again when the land is left out. After sowing the clover it would be possible in many cases to get the crop in, after which the remainder of the stubble land could be sown with oats. While this means more cropping than at present, sheep would profitably harvest the clover, and in many seasons oats also. By adopting this method a large quantity of organic matter removed from the soil by wheat growing would be replaced. In good seasons, when there is a good growth of feed, the oats could be cut for hay and stacked. When the



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feed was beginning to get scarce, the oaten hay could be fed to sheep, thus returning a valuable manure and improving the land. What is termed green manuring is growing a good crop of green stuff, ploughing it in, and allowing it to rot. This greatly improves the land, but it seems a wasteful method in view of high values for land and wool and mutton in great demand. With the growing of a nitrogen-collecting and fixing plant, and feeding it off, the soil can be restored to their original fertility in a far more profitable way. The replacing of organic matter in the soil will provide food for worms and other soil organisms without whose aid vegetation cannot flourish. Land with a good supply of organic matter will not wash out so much or lie wet to the same extent as land deprived of it, because this seems to smooth over the grains of the soil, keeping them more loose and so absorbing more moisture and retaining it for a longer period.

MANNANARIE.

September 20th.—Present: nine members.

PREPARATION OF FALLOW.—The following paper was contributed by the Hon. Secretary (Mr. W. Crawford):—"No definite system for the preparation of fallow that will suit all classes of soil and climate conditions can be suggested, but I find the following system to be very satisfactory in this locality, where the farmers' main object is to grow wheat. If stubble land is to be fallowed, the straw should, if possible, be burned towards the end of the summer, but if the summer has been wet, and the straw contains green summer growth, burning should be delayed until the commencement of frosty weather. Commence fallowing as soon as seeding is completed, providing the land is not too wet nor too hard to make a fairly decent job, and do not plough deeply unless weeds have made a good growth; from 2in. to 3in. is quite deep enough for early fallowing. Shallow fallow provides the best opportunity for the germination of weed seeds. As the season advances, and weeds make a good start, plough slightly deeper, but do not exceed 4in. Deep fallowing is not necessary for growing good crops in the district. The first land fallowed should be harrowed twice across the ploughing about the end of July. The fallowing should be finished by the end of August, and the harrowing by the end of September. All land fallowed should have at least one good rain on it before it is harrowed down. After the paddock has been harrowed, put sheep in occasionally when the surface soil is dry, to eat off any green stuff, but on no account have sheep on the fallow while the land is wet. All fallow should be cultivated before harvest, the later the better, because late cultivating destroys many of the summer weeds. If possible, cut out all thistles, and cart stones off the fallow before harvest. Keep the fallow clean with sheep during summer and early autumn. Should there be too much growth for the sheep, the cultivator must be set to work, but I do not favor summer cultivating when summer weeds can be destroyed by any other means."

BOOLEROO CENTRE, September 5th.—The Vice-Chairman of the Advisory Board of Agriculture (Capt. S. A. White, C.M.B.O.U.), attended the meeting and delivered an address, illustrated with lantern slides, "Across Australia by Motor Car."

BUNDALEER SPRINGS, September 24th.—The paper "Farm Management" that had been contributed at the Annual Congress was read by the Hon. Secretary (Mr. M. J. Cronin). The report of the delegates to the Annual Congress was also received and discussed.

BLYTH, September 18th.—The subject, "Mouse-proofing Hay Stacks," was brought before the meeting by Mr. Drennan, and an interesting discussion followed. To a gathering of over 250 people, on September 7th, Captain S. A. White, C.M.B.O.U. (Vice-Chairman of the Advisory Board of Agriculture) delivered an address, "Through Central Australia by Motor Car," under the auspices of the local Branch of the Agricultural Bureau.

REDHILL, September 25th.—The meeting took the form of a "Useful Hints Evening," when several useful hints for the saving of time and labor were brought forward.

MANNANARIE, August 30th.—Mr. H. J. Apps (Assistant Dairy Expert) attended the meeting and delivered an address, in which he dealt with several aspects of the dairying industry. Mr. F. C. Richards, of the Department of Agriculture, was also present, and in the course of a short address explained the aims and objects of the Agricultural Bureau.

NORTH BOOBOROWIE, September 25th.—Messrs. Mudge and Giles read papers from the *Journal of Agriculture*, "Rotation of Crops" and "The Care of the Farm Horse." A good discussion followed. The report of the delegates to the Annual Congress was also received and discussed.

LOWER-NORTH DISTRICT. (ADELAIDE TO FARRELL'S FLAT.)

TARLEE.

September 21th.—Present: 17 members and visitors.

CONSERVATION OF FODDER.—Mr. A. L. Molineaux read a paper on this subject (see report of 1923 Annual Congress). In the discussion that followed, Mr. D. L. Clarke thought the expense of employing so many hands necessary to man a thrasher was a disadvantage to a small farmer; several farmers could combine and do their threshing together. The idea of conserving grain was an excellent one. Many farmers had not yet fully realised the benefit of conserving corn to feed, particularly to sheep, during a dry spell in autumn. Mr. L. Molineaux said in threshing the crops and stacking the fodder for food for stock it would be found that the stock would always cut their way into the stack on the side on which the elevator had been situated. It was, therefore, a good plan to distribute the chaff evenly with the straw in building the stack. He said horses did well on threshed straw. Mr. W. G. Branson asked "if weevil would go right through where corn was shot." Mr. A. E. Reed replied in the affirmative, and added that the weevils would do considerable damage if the storage place was kept dark.

ROSEDALE, July 26th.—Twelve members attended the July meeting of the Rosedale Branch, when a paper dealing with the subject "Fallowing" was contributed by Mr. G. C. Hienjus.

WINDSOR, August 21st.—The President read an article dealing with the hand feeding of sheep, which provoked a keen discussion. Addresses were also given by Messrs. Ryan and Dawkins, of the Two Wells Show Society. Mr. H. W. Kenner (Hon. Secretary of the Two Wells Agricultural Bureau) was also present, and read a paper, "The Relationship of the Agricultural Bureau to the Agricultural Show Society."

YORKE PENINSULA DISTRICT.

(TO BUTE.)

MOONTA, August 25th.—The Hon. Secretary (Mr. J. Lawry) read a paper, "Tractor v. Horses," from the *Journal of Agriculture*, and an interesting discussion followed, in which Messrs. H. Cadd, T. Cliff, G. Page, A. Middleton, E. Atkinson, F. Trennery, D. Kitto, and A. Ferguson took part.

WESTERN DISTRICT.

CARROW.

August 23rd.—Present: 14 members.

SELECTION OF FARM IMPLEMENTS.—"For the growing of wheat in South Australia, the selection of implements is an important item, and small implements are not satisfactory or economical," said Mr. A. Freeman, in the course of a short paper under the above title. For fallowing, the speaker recommended

a six-furrow light draught plough. If the land were fairly free from stones, he thought a combined drill and cultivator would prove most satisfactory. For harvesting operations he favored the stripper and motor winnower. He also referred to various types and makes of engines, chaffcutters, &c., and thought a wagon with a medium weighted body and wide tyres would prove most serviceable in sandy country. A good discussion followed. It was decided that all future meetings of the Branch should be held on Wednesday night, at eight o'clock, on or before full moon.

DARKE'S PEAK.

August 22nd.—Present: nine members and two visitors.

COWS ON THE FARM.—“Cows are a necessary on every farm, but very little trouble as a rule is taken with them except to see that they provide milk and butter for the homestead,” said Mr. G. A. Noble, in a paper dealing with the subject, “Cows on the Farm.” To obtain the best results from the cow it was necessary to treat the animal with kindness, he said. It was advisable to allow the women folk of the farm to tend to the handling and feeding of the animals. When natural feed was scarce, and especially during the summer, he recommended feeding the cows in the morning with two kerosine tins full of oatens chaff and 1½lbs. of molasses, the feed to be damped before being fed to the cows. For the evening meal he suggested two tins of cocky chaff and 2½lbs. of oats. Twice during each week one handful of salt should be added and mixed with the feed. One and a half pounds of molasses should be mixed with 4galls. of water. He also thought it advisable to make provision for green fodder by preparing a plot of land and broadcasting 10lbs. to 15lbs. of lucerne seed to the acre, just after a good rain had fallen. The seed could be covered with a set of light harrows. In the discussion that followed, Mr. H. Noble thought it better to feed the cows on hay rather than on chaff. Mr. Kitch had found a mixture of cocky and hay chaff, molasses, and bone meal an excellent ration for dairy cows.

KOPPIO (Average annual rainfall, 22.40in.).

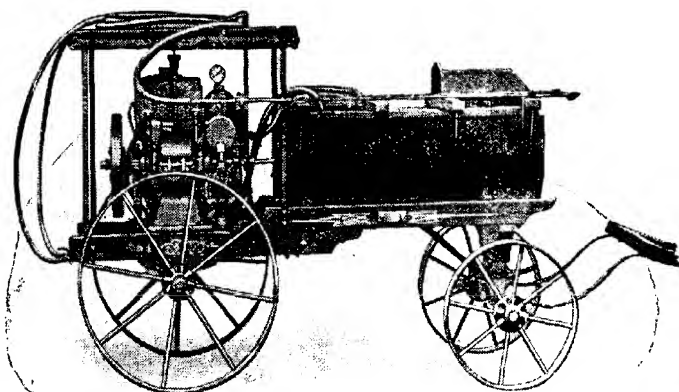
August 21st.—Present: 11 members.

TABLE GRAPES FOR THE HOMESTEAD.—Mr. F. C. Barraud contributed the following paper: “The grape vine is one of the hardest fruit bearing plants. It can be grown over a very large area, provided it is properly handled. With climatic and soil conditions such as we have in this district, and a limited number of plants well looked after, the vine will provide the home with fruit for a number of months in the summer. The high quality table grapes that are grown for commercial purposes are generally grown on rich, deep soil, well supplied with organic matter, but this fact does not prove that good fruit cannot be grown on a soil of lesser quality. Annual rainfall of from 15in. to 25in. is suitable for vines. When the subsoil receives a good soaking and the soil is well tilled, the moisture will be retained for many months. In choosing a position for a small vineyard, preference should be given to a spot between the hills, fairly exposed to the sun and wind and yet sheltered on the eastern side if possible, to obviate late frosts damaging the vines. If late frosts strike the garden when the leaves and bunches are young and tender, they sometimes destroy most of the crops. Land for vines should be deeply worked, and the subsoil should not be brought to the surface where avoidable. Well rotted stable manure or bonedust should be mixed with the soil. This class of manure will help the young vines for a long time. If they are to be worked by hand and the soil is rich, the vines should be planted 6ft. by 6ft., but if to be worked by horse implements, 10ft. by 10ft. would be preferable. Two methods of training vines are the trellis and the gooseberry bush systems. The latter, providing you are treating vines which are pruned annually to two or three buds, returns beautiful fruit. On the other, if you are working vines which do not fruit freely so low down on the spurs, there is little hope of doing away with the trellis in some shape or form. When a rooted cutting is received from the nursery, it is necessary to prune it back to one bud, and after it has struck, again prune it back to one bud. The stem should not be more than 10in. or 12in. clear of the branches. Do not raise the frame work in the trellis too high, because the higher it is, the more the fruit is exposed

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to winds and bird pests. Tillage of the soil means much to the growth of the plant. The best method is to plough the land deeply, say 5in. or 6in., as soon as the first autumn rains will permit, and then leave it to sweeten with the action of the sun and air. After winter rains are over and spring is approaching, take the plough and cross work the land, turning in all the weeds. After ploughing is completed, keep the cultivator and harrows going, to make the surface fine and dry, thereby preventing the evaporation of moisture. If rain, say ½in., falls after the land has been worked, again give the surface a good harrowing. Soil fertility must be kept up to a high standard if the vineyard is to be a success. An occasional good dressing of farmyard manure will prove highly beneficial to most soils, and if one has to fall back on artificial fertilisers, bonedust and then superphosphate are helpful. A good dressing consists of 2cwts. of bonedust and 1cwt. of sulphate of potash. This should be applied close to the plants, and not over the whole surface of the land if you wish to obtain the best results."

McLACHLAN.

September 1st.—Present: 13 members and three visitors.

TAKE-ALL.—In the course of a short paper dealing with this subject, Mr. Jericho said take-all generally appeared in the third crop when the seed had been sown in light land. To reduce the risk of the disease making an appearance, Mr. Jericho was of the opinion that the third crop should be of oats, and after the crop had been reaped the stubble should be burnt, and the land left for grazing with sheep as long as possible. If the land was heavily stocked with sheep in the early part of the season and late in September, the danger of take-all would be reduced to a minimum. When being prepared for a crop, the land should be thoroughly fallowed, harrowed three weeks after the completion of ploughing, and kept as free from weeds as possible during the early part of the season. If the land was likely to become water-logged, it would be necessary to work the plough at a shallow depth, the main point being to expose the roots of all plants to the air. If it was proposed to crop stubble land, it should be thoroughly broken up, and left exposed to the air for about three weeks before the crop was sown. The speaker also contended that the exposure of the roots of plants to the air had a tendency to check take-all. When the land was too poor to grow sufficient stubble to carry a fire, the second crop should be on fallowed land, and the third crop should consist of oats, so that sufficient straw would be provided to destroy the mallee shoots. The next year the paddock could be left out for feed. When the land was again brought under the plough, the first crop should be wheat, followed by oats, and then left out for grazing. He thought that a profitable crop could also always be grown on hay stubble if the land was ploughed, the roots of the plants exposed to the air, and then left for three weeks before the crop was sown.

MOUNT HOPE.

September 10th.—Present: 11 members and visitors.

HAND FEEDING SHEEP.—Mr H. Doudle read a paper, "Does it Pay to Hand Feed Sheep?" and in the discussion that followed, Mr. R. C. Myers said he had fed sheep on hay with a fair amount of success, but found there was a good deal of waste. He was of the opinion that with cheaper labor, hand feeding of sheep would pay in that district. He also thought that with ordinary troughs there would be a waste on account of the chaff getting wet or blown out with the wind, and thought sheds should be built over them. Mr. Myers said a feeder in the form of a larger hopper with troughs around it could be built. The hopper could be filled and then fed automatically into the troughs. Mr. W. Mahoney was in favor of hand feeding and intended to give it a trial next year. Mr. J. Doudle said he had been hand feeding his sheep the last three or four years and found it a success. He had fed hay chaff mixed with barley. Mr. J. R. Winstanley had given hand feeding a trial and found it a paying proposition. Mr. G. A. Vigar was not quite sure the system would pay in that district, and doubted whether in the case of one man working a farm if it would pay to cut the crop for hay and feed it to the sheep, or whether the crop should be reaped and the grain sold. So far, he was inclined to think the latter would pay the better at the present price of grain. Notwithstanding that, he meant to try hand feeding on a small scale.

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TALIA.

August 19th.—Present: seven members and two visitors.

RABBIT DESTRUCTION.—Mr. J. McBeath, who read a paper dealing with this subject, first referred to the alarming spread of the rabbit pest and the many attempts that had been made to exterminate the pest. The farmer and small landholder with netted holdings should be able, by the adoption of the following method, to keep his land almost entirely free from rabbits. In the first place, all the holes and warrens should be fumigated either by the engine exhaust method or a machine specially designed for the purpose. If the warrens were treated properly fumigation should account for all the rabbits in the burrows, but in a country that carried a good deal of bushy growth many of the rabbits spent but very little of their time in the burrows. During hot weather a sub-soiling plough should be obtained and all the warrens should be ploughed out as deeply as possible. The rabbits that still remained on the property, Mr. McBeath believed, could easily be caught with traps and dogs.

TALIA.

September 8th.—Present: 10 members and visitors.

HORSES ON THE FARM.—In the course of a short paper under the title "Too Many Horses on the Farm" Mr. J. Graham said it was not profitable to have too many horses on the farm. In districts where the area of the farms was comparatively small, from 10 to 12 horses should be sufficient working strength, but one frequently noticed considerably more than that number of horses. If farmers were to keep sheep, instead of the extra horses, it would be more profitable. Breeding horses on small farms, in the opinion of Mr. Graham, was unprofitable, because in the first place the farmer lost the use of the breeding mares for three or four months of the year, and secondly, the young horses caused a good deal of trouble in pawing at the fences and damaging gates. The speaker considered that 50 ewes would return the price of a good farm horse from the wool and mutton, and the natural increase of lambs would make the sheep a more profitable source of revenue than horse breeding.

WIRRULLA.

August 25th.—Present: 20 members and nine visitors.

HANDLING OF YOUNG HORSES.—Mr. S. J. Pearson, who read a paper dealing with this subject, said it was very difficult to make a hard and fast rule as to how a colt should be handled, because the temperament of each animal was so different. As a general rule, however, the speaker suggested that the young horse should be run into a strong yard with a mob of other horses so that the animal would not become unduly excited. A stout post should be placed in the centre of the yard, and with the aid of a lasso very little difficulty should be experienced in catching the colt and bringing it up to the post. Next an attempt should be made to put on the headstall as quickly as possible. If the colt objected to being touched on the head a piece of bagging tied to a light stick and rubbed over the animal's head would, as a rule, show the animal that it had nothing to fear. Great care should be taken not to hit the colt on the head, and it was a mistake to knock the teeth of the colt in order to make it open its mouth. If the thumb was inserted into the side of the mouth of the colt no great trouble would be experienced in placing the bit into the mouth. One end of a rope should then be passed through the near side bit ring, whilst the half hitch would still be kept around the post and a start made to mouth the colt by making it run around the yard. After the colt had run around the yard in one direction, the rope should be changed to the other side of the bit, and the performance as in the former case repeated. When the colt answered the pull on the rope fairly well it should be led out of the yard, but care should be taken not to keep the colt occupied in that manner for too long a period, because there was a danger of it becoming sulky. The speaker suggested that the colt should be hobbled and turned loose in the yard, and every hour or so the farmer could go into the yard and catch the animal. If that was done for half a day it was only on very rare occasions that the lasso would have to be called into use again. Next day the colt should be harnessed between two quiet workers in the plough, and for the first few days it should not be worked too hard or for too long. The colt that was of a wild and nervous disposition required different treatment from the foregoing. The animal that was inclined to be fractious should be handled

quietly, yet in a firm and confident manner, the speaker being of the opinion that nervousness in a horse was caused by nervousness being displayed by the breaker at the time the colt was being broken in. The horse with a savage nature should be handled with all kindness possible and given a fair trial, but if the animal still showed unmistakable signs of vice it was better off the farm, for such an animal was a source of constant danger to those who had to handle it. For the colt that sulked after it had been roped, the speaker considered the best plan to adopt was to fasten a set of hobbles on the animal and leave it alone for a few hours, and to repeat the practice until the colt was cured of its bad habits. Much more careful handling was required for saddle and harness horses, because it was most essential that they should be taught to answer the rein readily. To teach the horse to carry his head in a stylish manner the speaker suggested the following plan:—"Pass a strap through a ring and fasten the ends of the strap to the rings of the bit. Then pass another strap through the centre ring and secure it to the surcingle, drawing it tightly, which will cause the colt to bring its head well back and induce it to arch its neck."

BUTLER, September 4th.—The September meeting of the above Branch was attended by the Superintendent of Experimental Work (Mr. W. J. Spafford) who delivered an address in which he dealt with the subjects, "Cultivation of the Soil," and "Top Dressing Pastures."

MILTALIE, August 24th.—Mr. D. P. Bagnell tabled a fine sample of tree lucerne, and an interesting discussion regarding its suitability as a fodder for that district followed. The meeting then took the form of a social evening.

MOUNT HOPE, September 22nd.—The meeting took the form of a "Question Box," when several subjects, including "Farm Tractors," "Fruitgrowing," "Early and Late Wheats," "Side Lines on the Farm," and "Take-all," were brought forward, and an interesting discussion followed.

SMOKY BAY, August 25th.—The monthly meeting was held at Mr. E. Lovebeck's residence. During the afternoon, members inspected the experimental plots being conducted in conjunction with the Department of Agriculture, and at the meeting which followed, several subjects of local interest were brought forward for discussion.

WUDINNA, August 31st.—The Manager of the Minnipa Experimental Farm (Mr. R. Hill) attended the meeting, and delivered an address, "General Farming Practices."

EASTERN DISTRICT.

(EAST OF MOUNT LOFTY RANGES.)

RAMCO.

August 20th.—Present: 11 members and three visitors.

FARMING AS A BUSINESS.—Mr. Jemison read a paper dealing with this subject. The writer pointed out that a farmer needed to work his land as a business and to keep records to be successful. He made mention of many points in which the farmer, by giving thought and adopting systematic records, could make savings. Mr. Jemison stated that he knew how lax farmers were in matters of record, and though the paper was not for fruitgrowers there was much that applied to them. Mr. Lewis agreed that the fruitgrower was often very lax in keeping proper records regarding the working of his property. He thought that the income tax had done much to educate both farmers and fruitgrowers to keep accounts. Mr. H. Green thought the keeping of records of stock, &c., was a point that the orchardists overlooked. Neither did they study conditions to enable them to ascertain the type and quantity of manure and the quantity of water that should be applied to the land. Mr. Odgers considered the paper gave one many points, especially the keeping of records, so as to know definitely what the different varieties of trees yielded.

A further meeting was held on September 24th, when Mr. E. Burroughs read an article, "Lucerne Cultivation and Management," and a keen discussion followed. Mr. J. J. Odgers also gave an account of the Annual Congress.

COONALPYN (Average annual rainfall, 17.49in.).

August 24th.—Present: seven members and 30 visitors.

MALLEE FARMING.—In the course of a paper under the title "Some Causes of Failure in Mallee Farming" Mr. F. Pitman said he had resided in the mallee areas for a considerable number of years and, after noting the methods adopted in clearing the land, had come to the conclusion that the average settler always tried to handle too much land, not only at the start, but also during the rest of his career. That such was the case was very clearly demonstrated when one noticed on many of the sections that some of the land rolled during the first year of the occupancy of the block still remained untouched. He was of the opinion that there was only a comparatively small area of land in their district of which it could be honestly said that it had been thoroughly reclaimed from scrub conditions, even though in some cases the present occupier of the block was the fourth settler who had been in possession. As a general rule, it would be noticed that those settlers who had been successful were those that had not attempted to deal with more rolled land than they could properly handle. His strong contention was "small areas of land properly worked rather than attempting to deal with large tracts of half cleared land, which were an eyesore to the district and a reduction on the value of the holding." A lively discussion followed. Mr. George disagreed with the views of the writer of the paper and contended that the best plan was to roll down a comparatively large area of scrub, and to endeavor to crop a large area in order to secure a good total return, even if the average yield was small. Mr. Tregenza agreed with the views of the writer of the paper. Mr. A. E. Gurner presented a paper, "Tractors," in which an interesting description of different types of machines was given. Mr. J. J. Cronin addressed the meeting on his observations at the Roseworthy Agricultural College Short Course for Farmers, and the meeting concluded with a supper and dance.

COONALPYN (Average annual rainfall, 17.49 in.).

September 21st.—Present: seven members and 10 visitors.

TOP DRESSING OF GRASS LANDS.—The following paper was contributed by F. J. Tregenza:—"From results obtained in older agricultural countries, from records of years of trial in Victoria, and from experiences in this district, one feels tempted to predict that within a few years the regular application of super to pasture lands will be a recognised practice by wide-awake farmers. The need for making every cleared acre produce more will eventually compel the man on the land to adopt this practice. Most of us have seen the stimulus which has been given to the ordinary grasses when, perhaps, the drill has been run out to empty on spare ground. In all probability stock have been run continually on this land, and hence no striking contrast has been noticed. Only when stock have been kept off such a piece of ground can the remarkable improvement in the growth of the feed be noticed, particularly in the early spring. If, for a total cost of 5s. to 6s. per acre per year, we can double the number of sheep kept, or the number of cows milked, or the number of horses or pigs that can be grazed, then we are investing in a sure and sound proposition. I believe this to be possible at Coonalpyne. I have been surprised at the amount of grazing on certain small homestead paddocks of mine that have been regularly dressed with super for a number of years. At present they are a dense mat of trefoil and melilot, and since early June horses, cows, and pigs have been almost continuously grazing on them. These good results can be secured from the larger paddocks, especially where clovers are already well established." Quoting from a pamphlet issued by the Department of Agriculture of Victoria, Mr. Tregenza then made a summary of the points, worthy of consideration, to those who contemplated dressing pasture lands:—(a) Where the rainfall exceeds 20in. there will be a pronounced effect from dressings of 1cwt. upwards, but even in districts where the average fall is as low as 15in. very satisfactory results have been attained. (b) The stimulus to pastures has been so great that in many cases more than twice the number of stock have been carried and carried in better condition, and with an entire absence of "cripples" and deficiency diseases. (c) Because of the increased fertility and production land values have often doubled, and in many cases trebled. (d) Autumn applications are best—before the first heavy rains. An ordinary drill is generally used, the discs being raised off the ground where the surface is too rough and hard. One-horse fertiliser distributors can be obtained for £30 to £40, but they are not essential. (e) Quantity of super. The

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veter districts require the heaviest dressings, but applications vary from 80lbs. to 2cwt. At Coonulbyn 1 should say from 80lbs. to 112lbs. of 36 per cent. to 38 per cent. super would be most suitable. For light land that is to be left out of crop for some years 1cwt. every two years is recommended. On heavy land clear of shoots that is to be left for grazing, it seems to me that the outlay on a 1cwt. application each autumn would be more than repaid in the increased net profits that would be received. (f) The super is used by plants as they require it and none of it is wasted. It will not wash out with floodwaters, and in droughty spells will continue to fertilise the grass so long as there is any moisture in the soil. Ordinary dressings of super will not blight off grass or crops in a dry year. (g) Top dressing improves the fertility of the soil by encouraging the spread of clovers. I have noticed, too, how the good grasses follow the super, particularly the clover family. It certainly stimulates the better grasses, with the effect of discouraging some of the useless weeds. The good effect upon the health and condition of stock by top dressing grass lands is one of the strongest points in favor of this practice. If phosphoric acid is lacking in the soil the feed will lack essential vitamins, and in consequence, stock, and particularly growing stock, will not thrive as they should.

YOUNGHUSBAND.

August 23rd.—Present: nine members.

ENSILAGE.—The following paper was read by Mr. F. Macrow:—"It is surprising to note that, although the first silo to be built in Australia was erected in South Australia, the farmers of this State are far behind those of Victoria and New South Wales in realising the importance of the silo as a means of conserving fodder. Ensilage making has now passed the experimental stage, and many farmers in all parts of the world rely almost entirely on ensilage for fodder, in times of drought. Ensilage stands alone as an insurance against drought, and in a district like this, where we have feed in abundance for a few months of the year and then practically nothing, I think no dairyman can afford to be without a silo. It supplies fodder that is most needed in the late summer and autumn, when a moist, juicy food is required to stimulate the milk flow of the cows. Lucerne rarely lasts long enough to carry on to the time when the natural feed is sufficient for the stock. For crops ensilage has many indisputable advantages over hay, the chief being its immunity from fire and vermin of any description. It will keep indefinitely without any depreciation in value, and is always ready for immediate use. It is a far more valuable fodder for milking cows than hay, because it has a favorable influence on the milk flow. The crop intended for ensilage is more easily secured than the hay crop, because it can be cut and carted straight to the silo in any sort of weather, whereas with hay there is the worry of getting suitable weather for cutting, stooking, carting, and stacking. The silo can be made in different ways and with different materials. Brick, stone, or concrete are generally considered the best materials to use, but wood or iron or even wattle and daub can be used. The latter, however, is not long lasting, and in using iron it is well to paint the inside with tar or whitewash to guard against the action of the acids in the ensilage. There are two kinds of silos—the overhead and the pit. The overhead is the more popular because of the ease with which it can be emptied, but I should much prefer the pit silo in this district, because the cost of excavation should not be great and there is not much danger of soakage in the sand. Also, the walls need not be so thick or well made and the pit can be easily filled. When butter is 2s. 6d. per lb., surely no one would mind the small amount of labor involved in getting a dozen bags a day from the pit. That would be enough for 24 cows. The main thing is to have the silo, when possible, much deeper than it is wide to help the material to settle down. It is also necessary to have the silo airtight, because the exclusion of air is the principle upon which the manufacture of ensilage is based. A silo 20ft. deep and 15ft. wide will hold about 100 tons of silage, and this would keep 30 cows for about six months; 20 cows would eat about 70 tons in the same time. This is feeding 30lbs. to 40lbs. per day per cow. It is better to have the corners rounded off in the silo in order to make it easier to tramp down and so make it airtight. Practically all green fodder can be successfully used as ensilage. The legumes, such as lucerne, &c., are not generally found so satisfactory as the others on account of unfavorable chemical changes due to the high nitrogen content, but mixed with other crops, such as wheat, barley, oats, rye, &c., they would give

good results. The last named cereals all make good silage. Maize is considered the best of all crops for ensilage, and sorghum, Sudan grass, &c., will also make good silage. Good mixed grasses also make excellent silage. During the filling of the silo the ensilage should be continuously tramped down and a sprinkling of salt added to every foot or so of greenstuff is an advantage. Special care must be taken in tramping the edges and corners of the pit, for these are the parts where the air is most likely to gain an entrance, and if it does mould will result. When the silo is full it can be either sealed and weighted straight away or left for a few days to settle down, and then the top few inches, which will be found to be mouldy, can be taken away and the silo filled a foot or so higher than the top of the pit. The top is then covered with damp straw or chaff for about 9in. and then weighted with logs or old posts or stones. It is a good plan to cover the top with earth. The main object being to keep out the air, weighting is not so important. Cows should have about 30lbs. to 40lbs. per head per day, and a few pounds of oats added will make a balanced ration. When feeding cows it is as well to remember that ensilage taints milk, not through the cow, but through the air, so it is as well to feed it away from the cowshed or handle it carefully in the sheds. The best time to cut the cereals is a little before the time for hay cutting, or when the grain is in the milky stage. For maize it is a good plan to start cutting at the "doughy" stage. Lucerne and natural grasses should all be cut when flowering. The main point is not to cut before the full amount of nutriment can be obtained, nor too late when the crop is too dry. When using natural grasses or short lucerne it may be found more convenient to put the materials straight into the silo without chaffing, but care will have to be taken to tramp the greenstuff thoroughly, because it does not set down so easily as the chaffed material. With the other crops, and especially maize, it is much better to chaff the material, because of the ease with which it can be packed and removed from the silo. If the chaffcutter is placed next to the silo with the elevator leading into the middle, the material can be cut, carted, and chaffed straight into the pit, and the quicker the silo is filled the better.

BARMERA, August 28th.—The Superintendent of Experimental Work (Mr. W. J. Spafford) attended the meeting and delivered an address, "Cultivation of the Soil." Mr. H. F. Levien also gave a short address, in which he dealt with the ploughing in of green crops.

BARMERA, September 24th.—Mr. H. T. Levien, of the Berri Branch, attended the meeting and delivered an address, "Spraying." Mr. Wiltack also spoke on the advantage of using prepared spraying compounds.

BERRI, August 22nd.—The Deputy Horticultural Instructor and Manager of the Berri Orchard (Mr. C. G. Savage) attended the August meeting and delivered an address, "Manures." At a further meeting, held on September 26th, an article dealing with the subject, "Cultivation," was read by Mr. R. McCreanor, and an interesting discussion followed. A report of the proceedings of the Annual Congress was given by Mr. Ranford.

BORRIKA, September 15th.—Several matters of local interest were brought before the Branch, and an interesting discussion followed. Members also discussed the question, "Analyses of Fertilisers."

COOMANDOOK, September 19th.—Mr. Ninnes read a paper "Management of Sheep," and a paper dealing with the subject, "Conservation of Fodder," was contributed by Mr. Upton. The Hon. Secretary (Mr. M. P. Wilkin) read an article, "Painting." Interesting discussions followed the reading of the papers.

MARAMA, September 21th.—A member read the paper "Farm Management" that had been contributed to the Annual Congress, and an interesting discussion followed. Messrs. A. Greig and T. Hinkley gave a report of the proceedings of the Annual Congress.

PARILLA WELL, August 20th.—A paper dealing with the subject, "Tractor and Horses," was read from the *Journal of Agriculture* by Mr. E. C. Slater, and an interesting discussion ensued.

WYNARKA, September 26th.—Fifteen members and one visitor attended the September meeting of the Wynarka Branch, when Mr. Hall read short papers dealing with the subjects, "Best Fence for the District, and "How to tell the Age of a Horse."

SOUTH AND HILLS DISTRICT.

CURRENCY CREEK.

August 24th.—Present: 16 members.

CLEARING HEAVY TIMBER WITH EXPLOSIVES.—The following paper was read by Mr. H. Higgins:—"The subject, 'Clearing Land,' can be divided into three branches:—(1) Clearing scrub land, i.e., land covered with mallee, gum saplings, broom, yacca, &c. (2) Clearing land timbered with trees varying in diameter from 4in. up to 10in. or 12in. at the base, and reaching to a height of 20ft., 30ft., or 40ft. (3) Clearing land of heavy timber ranging at the base from 12in. upwards; but more especially dealing with those around 2ft. and 3ft. at the ground line—and it is to this class that my remarks will apply chiefly. To deal with class 1—scrub clearing, &c.—one of the most important points to watch is the time of the year that the work is to be done. The farmer should start out on his block while he is still quite sure that he can fallow, and then thoroughly clear and fallow a strip of, say, 8ft. to 10ft. around the entire paddock to be used as a fire-break. He should then go through this scrub-land nicking the larger saplings, cutting down such trees as he thinks are too large for his roller. This he can do in the spring. Then having on hand a heavy wooden roller with strong iron cutters securely fastened to it, and a good team of eight to ten horses, or a powerful tractor, he can begin knocking down the scrub, bushes, &c., the roller breaking down or bruising the various shrubs and so making a good body of dry leaves for the fire to carry over later on. This rolled scrub should be exposed to the heat of summer until either February or March, depending in which part of the State. Here come the vital point—he will watch the weather for a suitable day, for on the quality of the burn he gets not only depends to a large extent the growth of his crop, but also a great saving in labor (if a good burn) in picking up sticks, &c., afterwards. Men who spend most of their lives out of doors can generally read the weather sufficiently well to know what kind of day the morrow will bring forth, and having formed his judgment, he will on the evening before burn back along his fire-break on the most dangerous spots so as to make things quite safe, for his main fire—which must be lighted on a hot, windy day—will be quite beyond control by the usual means of boughs, &c. With regard to class 2—timber varying from 4in. to approximately 12in. at the stump—it must be first ascertained to what use the land will be put when cleared. If for fruit culture I should recommend using a tree-puller for the larger trees, and for the smaller simply grab them out in the usual way. Here again the time of the year plays a most important part, and the work should be done after the winter has well set in and the earth has become thoroughly soaked. To attempt tree-pulling in the dry period means that a number of trees will snap off near the ground, and one's work of getting the butt out will be doubled. It is of the utmost importance for orchard work to get out the main strong roots, hence I suggest pulling rather than blasting. Should the owner intend sowing cereal crops, his cheapest method to follow would be to mullensise the smaller trees and shoot or pull the larger ones according to the time of the year. Once the timber is on the ground he can determine whether his distance to the railway, plus the cost of carting, will pay him for trucking the wood to the city. It can very easily not pay him, in spite of the high price paid by the consumer. In carrying out this work the farmer should especially see that all or any of his carting is done while the ground is hard. His best time probably would be to start clearing in the spring, and then by the time his wood was dry, summer would have begun, and both the carting and burning of tops would be made easy. If, however, only grazing of the land is sought, the only commercial way—because it is the cheapest—is to cut all small saplings and those only requiring a few axe-blows, say from 4in. to 7in. at the base, and ring-bark the balance, firing the whole paddock when the bark has begun to fall from the trunks. As a result, grass will appear after the first rain, and the carrying capacity of the land will be increased several hundred per cent. But to see so many thousands of blackened trunks on one's run is not a pretty site, and those who take pride in their holdings should try, when seasons are good, to get rid of these trunks as before described, because after the beneficial effect of the burn has been used up by the grasses, top-dressing will, in most cases, have to be resorted to. And now we come to class 3, which deals with the destruction, in many cases, of those grand old trees

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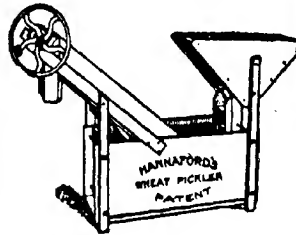
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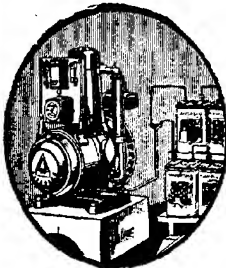
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which date back their birth to those dark ages of which so little is known. As an example of the age to which some of our trees can attain, it has been shown by experts of forestry that some of our red gums are well over 1,000 years old. These we can kill with an axe in an hour or render shapeless with explosives in less than half a day. To clear land on which is growing this large timber, the cheapest way that I have found is to ring the trees during the winter, making the ring-mark as low as one conveniently can, ringing deeply, so as to kill the tree at once. By March of the next year the tree will be dry, the bark falling off, and everything at its best for burning. One could begin earlier and to advantage where any large area is to be cleared, by making a substantial fire-break. It must be remembered that the burning must, if possible, be finished before the winter sets in. The first rain will not do much harm because the warm weather will soon dry any moisture out of the wood. The best auger to use for boring is a 1½ in., and it must be in good condition. The explosive generally used is gelignite containing 50 per cent. nitro-glycerine. There are several other explosives on the market such as dynamite, monobel, &c., but not having used them I can make no comment, save that gelignite seems wonderfully safe and free from freak explosions; in fact, it appears almost impossible to explode unless with the aid of the right thing—the detonator. A party of three will begin the work—two borers and one charger, the latter carrying the gelignite, detonators, fuse, crimper, and rammer. This man should be one who is careful and methodical, and can keep his mind on his work, for it must be always remembered that if a premature explosion occurs it will probably prove fatal. The borers will run the holes (one hole to each tree) a little beyond the centre of the tree, in one of 2 ft. to 3 ft. diameter, and in those of larger size as deeply as the auger will permit, beginning the hole some 8 in. to 10 in. above the ground and running down to almost the level, but not below the ground line. The charger will then come along, and will estimate the number of plugs necessary for a successful blast. In this he will be greatly influenced by the class of tree—whether red, blue, or pink gum. I would here like to point out that the shorter the grain of the tree the less quantity of explosives necessary, red gum being one of the best, blue and manna gums the worst to shoot. Supposing we decide to blast a red gum of, say, 2 ft. through, 4½ plugs will be sufficient. This charge will not usually blow the tree down, but it will so shatter the base that a fire will obtain a good hold, not only burning the tree down, but making a clean job of the stump. The charger will put the plugs in the hole in pairs (they fit nicely) and ram down tightly, the half plug he will save to receive the detonator. Having first cut, say, 1 in. off the fuse to be sure of having the powder in good condition (the cut should be made square across), he will take a No. 6 detonator, slightly run the fuse into it until it stops, when the detonator must be crimped on to the fuse to keep them together. The crimping should be done by the open end of the detonator. Taking now the half plug, he will use the handle of the crimper and make a hole in the plug, which, being soft, is easily done; then lightly push the detonator and fuse into it; now lower it into the hole until it comes in contact with the other plugs, then pour in some soft earth, sand, or wood shavings from the auger, but keep out all stones. Gently press home with the rammer, but do not use force—it is unnecessary and extremely dangerous. The hole can now be quickly filled up, ramming lightly now and then until the opening is reached. Cut off the fuse about 2 in. from the wood, and split it with a knife, exposing the powder. Everything is now ready for the explosion. Before going further, I want to emphasise the importance of careful handling of the detonators. They are really the only dangerous articles on the job. They contain a very powerful and extremely sensitive explosive which, on explosion, creates a pressure of eighty pounds to the square inch, so that if one did go off even without being attached to a plug, the unfortunate person holding it would require several fresh fingers at least. Now, as regards the cost of the above work, the gelignite, detonator, and fuse would cost approximately 7½ d., and the time taken by men used to their work would be in the neighborhood of ten minutes for boring and charging. When compared with the time taken by the best axemen, based at the present rate of wage, the use of explosives stands out far ahead, and even if there were little difference in cost, the saving of time would still warrant the use of the explosives, for the men with explosives do more in one day than the axemen would do in one week. Luncheon and knock-off times are the best in which to fire the charges, for then the men, armed with torches, can

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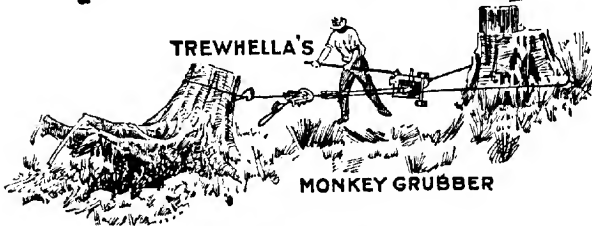
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begin on the lee side of the paddock firing two or three fuses before running for shelter. The shelter must be some good-sized tree, for the pieces of wood are blown out at terrific force, often travelling 200 yards from the scene of the explosion. One should never cut the time too short, but good fuse only burns at the rate of 3ft. in ninety seconds, and one will often be surprised at the time one will have to wait after having reached a shelter tree. Next day take a pair of good draught horses, a strong drag chain, and with the men go out to the paddock. There are almost certain to be sundry logs, limbs, &c., lying about amongst this class of timber, and these should be pulled up against the blasted butts, and if too long or heavy, cut in two with a crosscut saw. Should the day be suitable, with a fair wind, begin burning the heaps. It will not be long before your trees being falling, and the tops will need your attention, for no tree, however dry, will clean itself up. Two or three saw cuts will generally be found necessary, with a certain amount of axe work, before the whole tree can be burnt up cleanly, the horses pulling the heavier limbs against the butt. These fires should be looked to as often as possible, especially so before turning in for the night. Clearing this heavy timber must always be an expensive operation, even with the most up-to-date plant, but there is now on the market a machine which drives a saw by means of an engine, and this would greatly reduce the time taken in cutting up these trees. Anyone having much heavy timber to clear would be well advised to inquire into the costs, &c. In my remarks on blasting with gelignite, I have made no mention of firing charges by electricity, simply because for general work this method is unnecessary, but to those of my readers who want to remove huge trees of 4ft. or 6ft. in diameter at a moment's notice, so to speak, then boring a single hole into the trunk is practically useless, because sufficient explosive cannot be pushed into the hole near the centre of the tree to blow it down. The better way is to bore a series of holes at an equal distance from each other around the tree, charge all these, and fire by a battery, when the tree will be cut off as with an axe. Always bore the holes on the north-west side of the tree, because from that direction come the most suitable winds for burning. Although I have attempted to show those present the best way of clearing the land of timber, I cannot but feel that my paper would be incomplete if I did not lay stress on a point that is of national importance, namely, the wholesale destruction of good timbered trees, or what would eventually grow into such. Time after time we read articles in the paper by men who make a study of forestry, of a very probable world's shortage in several lines of timber within the next decade, and their remarks are but strengthened by our own observation in our own country, and even district. Already some of our most useful timbers are so scarce as to be practically off the market. I refer to that splendid tree called kauri pine, a wood searched after everywhere by boat builders or furniture makers. So also is the Huon pine, a name only to remember. Even in our very midst we find good splitting trees suitable for posts and sleepers or rails becoming scarcer and dearer as years go by, and if we only stop and look back about 15 or 20 years (a day when compared with the probable life of the world) we must realise that there will come a time, not very far ahead, when even firewood, let alone timbered trees, will be very dear. The man who looks no further than his paltry span of years is not only unbusinesslike, but he is not a true citizen to his country. And so I say of you who have no timber, plant clumps of trees which will serve as shade and shelter to your stock, and when you are gone they will have a commercial value for your descendants. And to those who are well favored in the way of trees I say clear by all means, thereby enriching yourself and your nation, but use the axe and firestick with discretion."

HARTLEY (Average annual rainfall, 15in. to 16in.).

July 25th.—Present: 17 members.

HARVESTER v. STRIPPER.—Mr. P. V. Paech, in the course of a paper dealing with this subject, said that the number of farmers using the harvester had greatly increased during the past few years, and that could be taken as a fair indication that gathering the crops with a harvester was superior to harvesting with a stripper and winnower. In a crop averaging 16bush. to 18bush. to the acre one man was able with the harvester to strip, clean, and bag from 60 bags to 70 bags per day, whilst the man using the reaper would only be able to strip that quantity of grain. Where the stripper was employed additional labor had to be engaged

for cleaning, and that at the present time entailed an expenditure of £4 10s. per week for each man. The speaker was of the opinion that a considerable improvement could be effected to the harvesters by simplifying the oiling of the machine. Some of the oil holes at the present time were placed in extremely awkward positions.

LONGWOOD (Average annual rainfall, 37in. to 38in.).

June 30th.—Present: 10 members and 12 visitors.

The monthly meeting of the Branch was held at the residence of Mr. W. Nicholls, and under the guidance of Mr. Nicholls members inspected the works of Kaolin, Limited. After tea, which was provided by Mrs. Nicholls, members proceeded to the Institute, where Mr. Joseph Johnson delivered a paper



entitled "Potato Growing." He introduced his subject by touching on the early history of the potato, its introduction into Europe and England more than 300 years ago—soon after which it became a main crop of commercial importance in Ireland. Continuing, he said the land on which it was intended to plant potatoes should be well tilled, but it should not be worked during the wet period of winter. The land should be well worked before planting, and it was better to delay planting, than to put the seed into an insufficiently prepared piece of ground. If the land was harrowed just as the potatoes were coming up, it would promote the growth of the crop, and destroy the weeds. With Pink Eyes, Up-to-Dates, No. 1 Carmens, and Delawares, the rows should be 2 ft. apart with 1 ft. between the sets. Snowflakes, Prolifics, and No. 2 Carmens required more room. The seed was often planted too closely, and better results would follow if more room were given. Early planting was recommended during the wet season, to a depth of not more than 3 in., and later on from 4 in. to 5 in. deep. He strongly recommended banking the potatoes, first as a protection, and secondly as an advantage in digging. Cut sets gave the best results for spring planting. The size depends on the number of eyes. About a 2 in. set was sufficient, and two good eyes ample. With some varieties one eye was sufficient if well shot. If the seed was not ready for planting, it should be kept out of the ground until in the proper condition. Round seed saved from a poor crop should not be used. At all times a change of seed was advisable. There was a lot of difference between potato seed and seed potatoes. Seed potatoes were those saved from tubers that grow in the land. Potato seeds were found on the top and were only found in beds that had bloomed under favorable conditions. If greater care were taken of seed before planting, better results would follow. He was convinced that extra care and time devoted to the handling of the seed would result in a 25 per cent. increase in the crop. Seed should be secured a month or two before planting and placed on trays, and provided with plenty of ventilation. He recommended cool storage for seed for summer planting. By that method one was sure of the first shoot, which always gave the best result in wet or dry weather. Seed saved from a crop that was dug before it had reached maturity gave better results than that left in the land until all the tops had dried off. During summer, when taking seed out to plant, boxes should be used. The shoots would be saved, and heavier yields would be obtained. When the potatoes were planted 2 ft. by 1 ft., an average return of 1 lb. per root would be equivalent to 8 tons per acre, and double that would be secured with good treatment. The time was not far distant when they would find it necessary to discover by analysis of soil what manures were required in the land. There was a disease known as "Scab," which he thought was caused by there being too great a supply of potash in the soil. Plants suitable for such soil were those that absorbed some of the supply of potash. Onions and tomatoes belong to this class. Manuring depended upon the previous crop. Where cabbage, cauliflower, lettuce, peas, and such like crops had been grown to perfection, very little manure would be required to grow a good crop, but it always paid to give a lighter dressing of potato manure. There was nothing to equal stable manure. If stable manure, bone dust, and ammonia had been used freely, a dressing of lime would give equal results instead of adding extra manure, because most of their land was deficient in lime. Lime was an essential plant food, and it had a very marked action upon the mechanical condition of the soil, making plant foods already in the soil available for use, thereby doing away with the need to some extent of adding further stores of plant food in the way of fertilisers. Lime would loosen heavy soil, and bind one of a sandy nature. It would make sweet an acid soil. Acidity was one of the troubles with new land. A liberal liming at the outset of operations opened a short cut to earlier returns. Lime also helped the warmth and moisture in the soil. It encouraged the activities of all of the nitrogen-gathering bacteria, and it brought about a rapid conversion of organic matter to humus, as well as counteracting the effects of excessive soluble salts. In renovating an old garden, an application of lime would do much to correct acidity and to counteract the evil of over-manuring, which condition often obtained when manures had been applied repeatedly each season until the soil became sick and sour. Lime should not be ploughed or dug into the soil, but spread on the surface and harrowed or cultivated into the land. The action of rain quickly carried it through to the lower soil. He

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only advocated the constant use of lime where manures had already been used. Lime should be applied to the land when it was being prepared for planting, not at the time of planting. Drainage was an important factor in the production of good potatoes. Where natural drainage was not present, it paid to resort to underground drains. Ploughed furrows, if used, should be at least 3ft. to 4ft. deep, whilst stones, where plentiful, answered very well. Clay pipes were the best, but were rather expensive. He had used slabs 18in. long, which made excellent drains. The drier the land was kept during the winter the better. It would retain the moisture better during spring, when the crop was growing. The paper then dealt with the dietetic value of the potato. A good discussion followed the reading of the paper, and many questions were answered by Mr. Johnson.

MACGILLIVRAY (Average annual rainfall, 19in. to 20in.).

August 28th.—Present: nine members.

THE KED.—The following paper was read by Mr. E. Seager:—"The sheep tick (*Malophagus ovinus*), commonly known as 'The Ked,' is known to flockmasters throughout the sheep world. It prefers the British breeds of sheep and their crosses to the Merino. In biting the ked injects a fluid into the wound to prevent the blood from coagulating. This causes the sheep a great amount of irritation. With a small flock that one sees regularly one cannot remain long in ignorance of the presence of tick. The sheep will be noticed biting at their sides and rubbing against objects. Financial loss in not dipping infested sheep is chiefly brought about through the following:—(1) Loss of wool and mutton caused by the sheep falling off in condition; (2) loss caused by sheep tearing at sides; and (3) discoloration of the wool by the eggs of the tick. The female ked lays from three to five eggs, attaching them to the wool by a sticky substance emitted when the eggs are laid. When the eggs are laid they already contain living pupae, and in 21 days the ends of the eggs break off, the young emerge and commence their depredations on the sheep; in another 12 days the young ked is fully developed. The ked never voluntarily leaves its host, except to transfer to another sheep or lamb when the opportunity arises. In cold weather the ked lives close to the skin, but in warm weather it can be noticed sunning itself on the tip of the fleece. Should it become detached it seldom survives longer than four or five days. The true tick, when gorged, drops from the sheep to the ground, living apart from the host for long periods, during which it deposits its eggs and hatches out its young. Sheep should not be dipped immediately off shears, but should have sufficient wool on them to enable them to carry the dip in their fleeces for a considerable length of time, thereby preventing, to a great extent, the likelihood of reinfestation."

BALHANNAH, September 21st.—Mr. S. Cockburn contributed a paper, "Top Dressing Pastures," which provoked a keen discussion. The report of the delegates to the Annual Congress, Messrs. H. Bohme and G. Edwards, was received.

BLACKWOOD, August 20th.—The Field Officer of the Department of Agriculture (Mr. S. B. Opie) attended the meeting and delivered an address, "The Soil and its Cultivation."

CHERRY GARDENS, September 25th.—The Government Poultry Expert (Mr. D. F. Laurie) attended the meeting and delivered an address, "Egg Production and Marketing."

CYGNET RIVER, September 24th.—Articles dealing with the subjects "Law of Heredity," "In-breeding," and "Cross-breeding" were read by Mr. H. L. Moar. A report of the proceedings of the Annual Congress was also supplied by the delegates.

KANGARILLA, September 21st.—Mr. R. G. Morphet read a paper, "Conservation of Fodder Crops." He also gave a report on other subjects that were dealt with at the Annual Congress.

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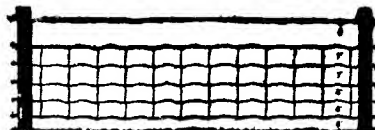


Fig. 7—Cyclone Special Spring Coil Sheep Fence.

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LONGWOOD, August 25th.—The monthly meeting of the Branch was held at Mr. A. Boyes's homestead. Members inspected the orchard where a pruning demonstration was given by Mr. Hughes. The meeting discussed the subject of the standard fruit case, and it was resolved "That in the event of an Act coming into force relating to the manufacture of fruit cases that it be made compulsory that all standard cases should be made with soft wood ends as an insurance against excessive shrinkage and warping."

McLAREN FLAT, September 6th.—The inaugural meeting of the McLaren Flat Branch was attended by the District Orchard Instructor and Inspector (Mr. C. H. Beaumont), and the Secretary of the Advisory Board (Mr. H. J. Finnis).

MOUNT PLEASANT, September 7th.—Mr. C. O. Royal read a paper, "The Care of Sheep," from the *Journal of Agriculture*. The discussion that followed centred around the point the correct time to commence shearing. It was generally agreed that an early start should be made in order to avoid trouble with grass seeds in the wool. The subject, "Summer Fodders," was also discussed. Mr. Royal spoke favorably of Sudan grass, and all members were of the opinion that summer fodder could be grown to advantage in the Mount Pleasant district.

MYPOLONGA, September 3rd.—Mr. E. Leishman (District Orchard Instructor and Inspector) attended the meeting and gave an address, "Spraying Fruit Trees and Vines."

SHOAL BAY, August 21st.—Mr. H. T. Noske read a paper, "How to Develop a Thousand Pound Cow," in which he took for the subject of his arguments the performances of a herd of Friesian cattle in Victoria.

SOUTH-EAST DISTRICT.

GLENCOE WEST (Average annual rainfall, 33.84in.).

August 24th.—Present: 11 members.

MAMMITIS.—Mr. A. von Duvé, who read a paper dealing with this subject, said the complaint known as mammitis in dairy cattle was an inflammation of the mammary glands and as a rule occurred after calving. Probable causes of the trouble were injuries to the udder, retention of the milk for too long a period without being withdrawn, germs entering into the udder, exposure of the animal to cold and wet weather conditions, lying on wet ground, or the careless use of the milking tube. The type of mammitis that took on an inflammatory condition might be ushered in with shivers, which would be succeeded in a short time by fever and dulness. In milder forms of the disease those symptoms were absent, and only local symptoms in the udder were present. The udder became hot, hard, red, swollen, and sore to the touch. In bad cases the cow showed a distinct disinclination to being milked. The milk was often curdled and sometimes tinged with blood. For treatment Mr. von Duvé recommended that first of all a good laxative should be administered—1lb. to 1½lbs. of Epsom salts and one tablespoonful of ginger in 3 pints of water, to be followed by ½oz. doses of saltpetre two or three times each day. In every severe case the speaker suggested the addition of from 15 to 20 drops of fluid extract of aconite and 10 drops of fluid extract of belladonna. The udder should then be fomented with hot water several times a day. After each fomentation the udder should be rubbed thoroughly with the following lotion:—Four tablespoonfuls of camphorated oil and one tablespoonful of turpentine. Several other remedies were suggested by the speaker. An interesting discussion followed, in which Messrs. Bouney, Tregenza, and Ferguson took part, the last mentioned speaker emphasising the necessity for isolating the cows that had the disease.

KALANGADOO (Average annual rainfall, 33in. to 34in.).

September 8th.—Present: 12 members.

CARE AND MANAGEMENT OF HORSES.—Mr. G. Bennett, who read a paper dealing with this subject, said the majority of farmers depended to such an extent on a team of horses as a means of gaining a livelihood, that it was most important that the animals should receive every care and attention. Under no circumstances should a team of draught horses be worked more than eight hours each day. He did not think any hard and fast rule could be laid down as to the quantity of feed that should be given each horse each day, but the teamster, by careful observation, would be able to tell the exact requirements of each animal in the team. Horses that were called upon to perform heavy work required good feed, and the farmer should reserve the best portions of the crop for the horses. From experience he had no hesitation in saying that the best plan for feeding the team was to tie up each horse in a separate stall. That would prevent the "boss" animals from disturbing the other horses. If the chaff was of the best quality he did not think any supplementary ration would be needed, but if the team was doing exceptionally arduous work, then the addition of oats or bran, or crushed barley, to the chaff would prove of benefit. A good supply of clean water was also essential to the good health of the horses. Special care should be taken in the selection of the collars. The collar should fit the horse fairly tightly, for he believed that 90 per cent. of the shoulder troubles were caused through ill fitting collars. He realised that with some horses it was almost impossible to keep their shoulders free from sores. Such animals the speaker thought the farmer would be well advised to sell. The team should be thoroughly groomed each morning before being harnessed, and the collars kept free from dirt, &c. In the discussion that followed, Mr. McKenzie doubted the advisability of giving the horses extra corn when they had heavy work to do, because, when the work eased up, the horses would not eat the ordinary feed.

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KALANGADOO (Average annual rainfall, 33in. to 34in.).

September 8th.—Present: six members.

CARE OF MILK AND CREAM.—Mrs. M. Evans, in the course of a paper dealing with this subject, said milk was one of the chief articles used in the preparation of various forms of food, and it was also most necessary to infant life. For those reasons it was essential that healthy cows should be kept, and cleanliness in handling the product observed. Mrs. Evans considered it advisable to pass the milk through a fine piece of muslin, in addition to the ordinary metal strainer. All vessels used for holding the milk should be kept thoroughly clean. The milk should be separated at the temperature at which it was taken from the cow. On no account should fresh cream be placed in the can with other cream until it was perfectly cold. The room used for storing the produce of the dairy should not be used for the storage of vegetables or any articles that would be liable to taint the cream, &c. The cream should always be covered with a clean piece of muslin or cheese cloth. In the summer it was a good plan to add one tablespoonful of salt to every gallon of cream in the can. Whenever fresh cream was added to the can, the whole of the contents should be thoroughly stirred. During very hot weather the can should be placed in a vessel containing cold water, which should be frequently changed, and the cream forwarded to the factory as often as possible. Butter should always be made from cream three to four days old. After the butter had been put through the churn, and the buttermilk well worked out, it should be washed in cold water, until the water came away quite clear. When the butter was very soft, it was a good plan to work in a small quantity of salt before washing was commenced. That helped to make a firmer product and assisted in getting out the butter milk. After the butter had been thoroughly washed and salted according to taste, every drop of water should be removed, because insufficient working caused streakiness and tended to make the butter rancid. If it was desired to keep the butter for some little time, it should be well washed and salted and left until the following day in bulk, when it could be worked up again and the water beaten out of it before being made into pounds. During very cold weather, it was a good plan to warm the cream before commencing churning, and if any difficulty was experienced in making it break into butter, a little hot water could be added. All churns or bowls in which the butter was prepared should be scalded with boiling water, and then rinsed out with cold water. Butter pats, scales, &c., should be scalded, rubbed with salt, and then rinsed in cold water. During the summer the butter would sometimes stick to the pats if the above suggestions had been followed, but that could be corrected by rubbing a little mustard into the articles and a subsequent rinsing would usually correct any trouble. In the discussion that followed, Mrs. Dowdell suggested the addition of a little borax to the butter in the summer to help harden it. Miss Tucker said the addition of a small quantity of carbonate of soda to milk and cream helped to preserve it during the hot weather.

MILLICENT (Average annual rainfall, 29.25in.).

September 1st.—Present: 12 members.

HARROWING GROWING CROPS.—The following paper was contributed by Mr. J. J. Mullins:—"The system of harrowing growing crops has been practised for a number of years. The benefits to be obtained are numerous, chief amongst them being the destruction of weeds and conservation of moisture, and in heavy land the harrowing has the effect of breaking the clods, especially if the land is worked after rain has fallen. As a rule, weeds are more easily destroyed than the barley plant, and this is due to the fact that the roots of the weeds are nearer the surface than those of the cereal. Whilst some of the barley plants will be pulled up by harrowing, it will be the weak and sickly plants, which, as a matter of fact, are better out of the land, for if they ever come to maturity they would yield but a poor return. Feeding off the crop is also practised to a considerable extent, but I do not think the benefits to the crop by this method are in any way comparable to those obtained from harrowing. The harrows should have sharp points on long, thin tynes, and the harrowing, to be effective, should be done after a rain and when the barley plant is firmly rooted and is from 4in. to 5in. high."

MOUNT GAMBIER (Average annual rainfall, 32in.).

September 8th.

QUALITY OF SOUTH-EASTERN ONIONS.—In the course of a short address, in which he commented on the quality of the onions grown in the Mount Gambier district, Mr. A. Kieselbach said good marketable bulbs commanded fair prices, but those grown at Mount Gambier were often a drug on the market because of their size, which ranged from that of a Barcelona nut to 4ozs. or 5ozs. In the Western district of Victoria the weight varied from 4ozs. to 12ozs., though the crop was often grown in inferior soil to that at Mount Gambier. The higher market value obtained for the better class bulbs offered ample inducement to growers to produce them. While in Victoria ordinary onions commanded £8 a ton and picklers £16, the opposite was the rule in the South-East. In their district picklers were regarded as rejects from the crop, whereas in reality they were a distinct variety, *i.e.*, Silverskins. Mr. Kieselbach attributed the inferior quality of local onions to the method of cultivation. The seeds were drilled instead of being planted, and as three or four seeds were dropped to every inch of the furrow the young plants were left without room to grow. The best and cheapest plan was to sow the seeds thinly, either in June or July, in a clean seed bed, leaving room for the plants to develop. The preliminary preparation of the proposed seed bed should be commenced during September, and when the weeds appeared the ground should be harrowed on a fine, dry day. The process should be repeated on several occasions until the bed was thoroughly prepared. The distribution of the young plants should be made in September or October, and the planting done in a 2in. furrow made by a hand plough. The young plants should be placed about 4in. apart and covered by raking back the earth thrown out by the plough. Weeding was obviated by that method, and every onion attained a marketable size, since it had every opportunity to reach maturity.

MOUNT GAMBIER (Average annual rainfall, 32in.).

September 9th.

CHOU MOELLIER.—Mr. E. W. Tollner gave an address on the growing of chou moellier as a fodder for the dairy herd. He had found that one acre should be planted for every three cows. Allowance had to be made for the time it took to be ready for "plucking"; the plant had to become possessed of a good stalk. If it was well looked after it could be made the main supply of fodder. It had been said that chou moellier tainted the milk, but he had taken particular notice of that as a director of a factory, and he was certain that cheese was not tainted by its use, and dairymen need have no apprehension on that score. However, butter might be different. During last year Prof. A. J. Perkins visited his farm and asked him to keep a record of the fodder taken from the crop. He ascertained that from four pluckings there was a yield of 16 tons of leaf to the acre. From the first plucking the yield was 6 tons, and the other three, taken during the dry times, had yielded 10 tons. When he pulled the stalks, all of which were fed to the herd, he kept a record of their weight, and found that they yielded 11 tons, making a total of 27 tons of fodder to the acre. He commenced to feed from the crop the first week in December, and it was not until August that the crop had been finished. The lucerne flea was a pest that had to be contended with. It ate the young plants, and in order to surmount that difficulty early planting was recommended. His dairy herd consisted of 16 cows, and he had a crop of 6 acres of chou moellier, which had yielded him 35 weeks of fodder, each cow having been fed 70lbs. a day. Considering the respective merits of Sudan grass and chou moellier, he had found that, whereas a Sudan grass crop was consumed in three weeks, with chou moellier there would be another crop ready in eight weeks from the time of the last plucking. He had planted last year in December, but this year he had been earlier, and the plants were doing well, and they would be fit to pluck much earlier than usual. He had found that with an earlier planting the young plants were not bothered with the lucerne flea, which was not about until the second plucking, when the plants were too hardy for the pest to be a nuisance. With his last crop he had used 380lbs. of super to the acre, or approximately 1 ton on the crop. That was a large amount, but he wanted to be assured of its being beneficial, and he had therefore used a greater quantity than was usually required. In caring for the plants after

sowing, weeds were difficult to eradicate, but that could be overcome by planting in such a way that there would be rows across and along the field, thereby simplifying cultivation. It was the usual practice to plant in rows 3ft. apart with the plants a similar distance away, but he preferred adopting the plan of 3ft. apart for the rows and 2ft. 8in. for the plants. In that way 5,000 plants could be put in an acre. He always rolled the ground prior to planting, because he found that holes made with the "dibber" in the ground left uneven and loose by the scarifier invariably fell in, while the ground was firmer after rolling. The method he adopted in planting was for one man to go ahead making the holes and two men to plant. In that way 6,000 plants could be planted in a day. He always ploughed the land twice. If dairymen planted chou moellier they would find that the supply of milk would be sustained over a longer period. Of that he had ample proof, because for a short period he had had to stop feeding chou moellier and the supply went down considerably. Mr. J. Davidson said whenever he received milk from cows fed with chou moellier there was always a large return. He had even noticed that cows fed from the plants in the peaty soil at Allandale yielded good returns. Chou moellier lasted for eight months in the year, and was an excellent food when fed with hay and such like dry fodders. Mr. A. J. Hemmings said he had found that in the poor, sandy soil around Caroline it was better to plant the seeds instead of plants, and that should be done at the end of August or early in September. Another point was that the stalks could be pulled out and stacked somewhere, and it would be found that stock would eat them whenever they were fed to them. Mr. G. H. Kilsby, who had recently returned from a trip to Western Australia, read a paper, "Care of the Orchard."

PENOLA (Average annual rainfall, 26.78in.).

September 1st.—Present: 14 members.

CEREAL GROWING IN THE SOUTH-EAST.—In the course of a paper under the title of "Does Cereal Growing in the South-East Pay?" Mr. Hince expressed the opinion that on a block of an area under 500 acres cereal crops could not be grown profitably in the South-Eastern districts. In the first place, the South-East was too wet and cold for the successful cultivation of wheat, and the weeds grew so rapidly that they choked the crop. Barley could be grown almost to perfection in the South-East, yet of late years, what with pinched grain and not very remunerative prices, the growing of barley had not been altogether satisfactory. Oats also gave very good returns, but the harvesting of that crop entailed a good deal of difficulty because of the rough weather that was frequently experienced. Sowing fodder for cows and sheep was a profitable undertaking, but hand feeding was most essential during the cold months of the year. He thought one of the best plans would be to sow 100 acres of different fodders, say, chou moellier and mangolds, every year for ewes and lambs. A good market could always be found for fat lambs. During the last six years the average price for lambs had been well over £1 per head, and the whole secret of success of fat lamb raising appeared to rest in seeing that the ewe was kept in good condition. It was in connection with the latter statement that the barley could be used to the most profitable advantage. Instead of harvesting the crops with the thresher or harvester they could be marketed through the sheep. Such crops, in conjunction with the natural pastures and good water, would enable the farm to show a good profit at the end of the year. The paper provoked a good discussion, the consensus of opinion being that farmers would be well advised to feed sheep and other livestock with barley and oats grown on the farm and market the cereals in the form of fat stock.

ALLANDALE EAST, September 21st.—Mr. S. Butler read a paper, "Farm Management," that had been read at the Annual Congress, and an interesting discussion followed. The report of the delegates to the Annual Congress was also received and discussed.

NARACOORTE, August 11th.—Mr. R. G. Lock read a lengthy and interesting paper, "Abnormal Milk and Cream," and a lively discussion followed. The Hon. Secretary (Mr. G. J. Turnbull) was presented with a travelling rug as a mark of appreciation of the valuable services he had rendered the Bureau.

